From: SMTP%"SWAI@db1.cc.rochester.edu" 19-APR-1991 13:21
To: ABRIDLE@NRAO.EDU
Subj: thesis proposal

Date: Fri, 19 Apr 91 13:18 EST
From: SWAI@db1.cc.rochester.edu
Subject: thesis proposal
To: ABRIDLE@NRAO.EDU
Message-Id: <8A2E84CF023FC06FBF@DBV>
X-Envelope-To: ABRIDLE@NRAO.EDU
X-Vms-To: IN%"ABRIDLE@NRAO.EDU"

A letter addressing the issues we discussed along with a c.v. was mailed
today. You should receive it on Monday or Tuesday. I'll call or email
late next week to find out what the initial response it to my proposal.

From: CVAX::ABRIDLE 19-APR-1991 14:26
To: SMTP%"SWAI@db1.cc.rochester.edu",ABRIDLE
Subj: RE: thesis proposal

Sounds good. I'll look for it in the mail and will discuss the situation a.s.a.p. with Bob Brown, who is looking after the program. Based on an initial discussion I have had with him, I think the prospects are good. I gather he had also heard about you from Hugh, so has some background already. Best regards, Alan B.

From: SMTP%"SWAI@db1.cc.rochester.edu" 26-APR-1991 12:05
To: abridle@cvax.cv.nrao.EDU
Subj: thesis proposal

Date: Fri, 26 Apr 91 12:02 EST
From: SWAI@db1.cc.rochester.edu
Subject: thesis proposal
To: abridle@cvax.cv.nrao.EDU
Message-id: <84B8EB862BFF402359@DBV>
X-Envelope-to: abridle@cvax.cv.nrao.EDU
X-VMS-To: IN%"abridle@cvax.cv.nrao.edu"

Has "snail mail" gotten my letter/proposal to you yet? I guess it is still
early for there to have been even an unofficial reaction to it.

From: CVAX::ABRIDLE 26-APR-1991 12:11
To: SMTP%"SWAI@db1.cc.rochester.edu",ABRIDLE
Subj: RE: thesis proposal

I have received the package, and it looks fine. I have passed it on to Bob Brown, who is in charge of the student program, but he has been out of town for a few days and I have not heard his reaction yet. I think the prospects are pretty good, however, and I definitely expect to know by the time you will be here in May. I am optimistic but can't guarantee the outcome just yet.

Alan B.

From root Thu Jun 6 12:57:44 1991
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["417" "Thu" "6" "June" "91" "12:56" "EDT" "SWAI@db1.cc.rochester.edu"
"SWAI@db1.cc.rochester.edu" "<6479AB2BB11FC04573@DBV>" "5" "background reading"
"^From:" nil nil "6"])
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA15531; Thu, 6 Jun 91 12:57:44 -0400
Received: from db1.cc.rochester.edu by cv3.cv.nrao.edu (4.1/DDN-DLB/1.12)
      id AA24599; Thu, 6 Jun 91 13:01:00 EDT
Message-Id: <6479AB2BB11FC04573@DBV>
X-Envelope-To: abridle@nrao.EDU
X-Vms-To: IN%"abridle@nrao.edu"
From: SWAI@db1.cc.rochester.edu
To: abridle@NRAO.EDU
Subject: background reading
Date: Thu, 6 Jun 91 12:56 EDT

Vacation lasted a few days longer than expected but I am ordering BEAMS AND JETS IN ASTROPHYSICS today. I don't expect my progress through it to be blindingly fast since I will be primarily studying for my prelims. I will be sending you a weekly or bi-weekly report on my progress (ie, what my latest questions are) via email. Hugh and I are getting together today so that I can fill him inon how things stand.

From: SWAI@db1.cc.rochester.edu
To: ABRIDLE@NRAO.EDU
Subject: READING
Date: Wed, 19 Jun 91 17:39 EDT

ALAN,

I have ordered "Beams and Jets in Astroysics" from the book store. They tell me it will take three to four weeks to arrive. In the mean time I will be reading around in the litterature. I would appreciate a referral to any good references you find while working on your "Extra-galactic Radio Sources" paper. I just read "Extragalactic jets: trends and correlations" and I still have lots of questions. How, for instance, is it that bulk Lorentz factors can account for:
(i) apparent superluminal motion in VLBI maps
(ii) one-sidedness of VLBI jets,
(iii) high brightness temperatures, (how does cm wavelenght variability imply these?)
(iv) "low Compton x-ray fluxes from bright, compact radio sources," and
(v) misalignment between parsec and kiloparsec scale jetsfor sources with strong, dominant cores?
I would like to have some idea how buld relativistic motion in a jet implies the above conclusions

If I had my preference, I would spend the summer immersing myself in literature relevant to jets. However, passing the prelims has first priority. Thoiis
-oops- This is my second appempt so I'm taking my preparation very seriously.

It seems from your "trends and correlations" paper that if we just knew a little bit more of the important information about jets, then some of the puzzling thins would begin to become clear. For instance, why should one and two sidedness of jets be such a strong function of total power of the core? Why is magnetic field configuration correlated with sidedness and hence with core power? Could the core be responsible for generating the large scale magnetic fields which interact with the fetted material or do the jets somehow organize their own fields (the former would seem to correlate more readily with core power)? There really is a pattern here but what is it?

I'll send you another "progress" (or "current questions") report in a couple of weeks.

- Mark

From abridle Thu Jun 20 10:25:46 1991
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["1917" "Thu" "20" "June" "91" "10:25:13" "-0400" "Alan Bridle" "abridle "
nil "36" "Re: READING" "^From:" nil nil "6"])
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA19894; Thu, 20 Jun 91 10:25:13 -0400
Message-Id: <9106201425.AA19894@polaris.cv.nrao.edu>
References: <5A1AF9510BBFA0505E@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: READING
Date: Thu, 20 Jun 91 10:25:13 -0400

Hello Mark, thanks for your "report" and questions.

All of your questions about how bulk relativistic motion can explain the "smorgasbord" of phenomena in compact sources are answered, at least to some extent, in a review article by Ken Kellermann and Ivan Pauliny-Toth called "Compact Radio Sources" in Annual reviews of Astronomy and Astophysics, vol. 19, p.373-410 (1981). If you can get hold of this, take a crack at it and see how many of the questions remain! For a very succinct statement of the basic physics, see also the article by Roger Blandford and Arieh Konigl, "Relativistic Jets as Compact Radio Sources" in the Astrophysical Journal, vol. 232, p.34-48, (1979). Section II of this paper says almost everything you need to know about the basic effects, though a bit too tersely to pick it up the first time! If you want to speed-read that paper, you can skip most of section III on "clouds" first time through. Let's talk about details after you've had a chance to look at these.

The correlations with power are indeed a fundamental part of the "jet problem". Their presence in the data is what provoked me into concentrating so much on jets through the 1980's. I think that the underlying trends are for both Mach number and velocity to increase with the power output of the central engine, and one of the biggest questions now is whether the large-scale one-sidedness comes from intermittency in the engine or from bulk relativistic effects ("Doppler favoritism" of the approaching side of the flow). One possible project for you is to put together statistical tests to examine the "Doppler favoritism" idea using VLA data on a sample of powerful sources.

But as you say, priority #1 should be boning up for your qualifying exam. So don't get too sidetracked, there will be time enough to think about these things once your qualifying exam is successfully behind you!

Best wishes, Alan

From abridle Thu Jun 20 10:25:46 1991
X-VM-v5-Data: ([nil nil t t nil nil nil nil nil]
["1917" "Thu" "20" "June" "91" "10:25:13" "-0400" "Alan Bridle" "abridle "
nil "36" "Re: READING" "^From:" nil nil "6"])
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA19894; Thu, 20 Jun 91 10:25:13 -0400
Message-Id: <9106201425.AA19894@polaris.cv.nrao.edu>
References: <5A1AF9510BBFA0505E@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: READING
Date: Thu, 20 Jun 91 10:25:13 -0400

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But as you say, priority #1 should be boning up for your qualifying exam. So don't get too sidetracked, there will be time enough to think about these things once your qualifying exam is successfully behind you!

Best wishes, Alan

From root Wed Jul 3 21:12:23 1991
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
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"^From:" nil nil "7"])
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA28760; Wed, 3 Jul 91 21:12:22 -0400
Received: from db1.cc.rochester.edu by cv3.cv.nrao.edu (4.1/DDN-DLB/1.12)
      id AA07105; Wed, 3 Jul 91 21:16:33 EDT
Message-Id: <4EFD44F4D25FE007BC@DBV>
X-Envelope-To: abridle@nrao.EDU
X-Vms-To: IN%"abridle@nrao.edu"
From: SWAI@db1.cc.rochester.edu
To: abridle@NRAO.EDU
Subject: reading report
Date: Wed, 3 Jul 91 21:09 EDT

Alan,

I recently received "Beams and Jets in Astrophysics" and I am delighted with it. I have been hopping about reading parts of different sections before I settle down to work through it in a more linear fassion. One of the things that caught my interest is the difficulty in modeling jet collimation. According to Vincent Icke (Chapter 5 - From Nucleus to Hotspot: Nine Powers of Ten), the successful models of jet collimation are ballistic models. He also goes on to say such models are not in favor. Our discussions had left me with the impression that there is evidence for self organization of the magnetic field to promote jet collimation. How strong is that evidence? Another source of collimation could be the appropriate large scale organization of the magnetic field but how this happens on the scale Icke is talking about is hard to imagine.

Now for a question about the "cocoon" or "backflow" models of jet propagation. How does the whole jet-cocoon system get started? Does the jet immediately start building a cocoon which allows it to propagate yet farther? if this is the case, we ought to be able to see cocoons around jets for most of their length. My recollection of the pictures you showed me is that jets are not entirely shrouded in cocoons and that they might have propagated a non-trival distance before reaching the cocoon assisted propagation region. Perhaps, we can only detect the cocooning material near the end of the jet when in reality it encases the jet for it's entire length. Is it possible to test the cocoon model by studying the structure of the cocooning material?

Thank you for the references in you response to my last report. Hugh and Dan are giving me home work assignments which are prelim/thesis oriented. My first was to learn the four-vector formulation of E&M since I had not had that before.It's a very clever system.

-Mark

From abridle Mon Jul 8 11:19:16 1991
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
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Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA14653; Mon, 8 Jul 91 11:19:03 -0400
Message-Id: <9107081519.AA14653@polaris.cv.nrao.edu>
References: <4EFD44F4D25FE007BC@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: reading report
Date: Mon, 8 Jul 91 11:19:03 -0400

Hello Mark,

Glad to hear your copy of "BJA" has arrived. You'll probably find
Cawthorne's chapter on Parsec-Scale jets also helps with the questions
in your previous message.

Yes, collimation and stability over 9 powers of ten remain a major
question, and Icke is quite correct in complaining that people may be
seducing themselves into believing too much on the basis of numerical
models that only extend for a few decades in jet length/width ratio.
Also that the collimation has been forced in these models by the
initial conditions. They do, however, identify two main flavors of
jet propagation that Vincent might have said a bit more about. One of
these is entrainment-dominated, and probably applies to the plumed
low-power sources. As he points out, entrainment can be sudden death
to a relativistic jet; fortunately these are not the sources in which
there is any evidence, or need, for bulk relativistic velocities. The
other is cocoon-forming, and the suggestion from present models is
indeed that cocoon formation prevents direct contact between the jet
and the external medium; the jet ends up propagating through a cocoon
of its own waste material. If the jet is much lighter than the
surroundings, it will begin cocoon formation immediately, so at all
stages the jet is travelling at high speed through a slower-moving,
or backflowing, cocoon that it is inflating. The external medium
stays outside the contact surface with the cocoon (though there are
interesting questions about the shape and stability of the contact
surface over large scales and long times). In this case, ongoing
collimation of the jet must be a two-stage process - the external
pressure gradients must help to shape the cocoon (e.g. by keeping
it "squeezed" toward the end of the jet) while the cocoon itself
reacts back onto the jet. This two-stage process is not well-modelled
at the moment. The numerical work doesn't address it on anything
like the right range of scales. The analytical work (mostly getting
a bit dated now) is really talking about the low-power sources, where the
external pressure acts directly on the outflow.

The organization of the fields is a classic chicken-and-egg problem.
Does the flow organize the fields by "combing" them, or do the fields
organize (or help to organize) the flow via JxB forces? The impetus
for the MHD simulations was the hope that we might detect some strong
signatures of the latter case. The results so far have been from 2-d
MHD codes (though there is now a 3-d code running at Illinois thanks
to Mike Norman and David Clarke) and Icke is properly skeptical
about them. They do however agree that there is a trend toward forming
a quasi-ballistic "nose cone" in the field-dominated case and that this

strongly inhibits cocoon formation. If the 3-d MHD confirms this (i.e. if there is not a whole new parameter space opened up by effects that depend on the azimuthal coordinate around the jet) then it may be that the field-dominated case applies only to the well-collimated "naked jets" that we see in a few quasars. Then a major question is: "are these jets naked because they are field-dominated, or do they merely look naked because they are brightened relative to their cocoons by relativistic effects?" Certainly the jets that are good candidates for being field-dominated because of their apparent "nakedness" are all also strongly one-sided. In most quasar and radio galaxy jets, the cocoons are quite visible (especially for the galaxies). At least on the conventional wisdom, this is evidence _against_ the fields being dynamically dominant and _for_ their high degree of organization (inferred from high polarization) being the effect of field combing rather than cause of good collimation.

This is, however, one of many "tilts" in the conventional view that I see as plausible rather than obligatory, and Icke's chapter contains nice reminders of why one should still be open-minded about this.

The actual evidence for high degrees of polarization in high-power jets is also rather limited, because you need good transverse resolution on the jet to explore it properly. Cyg A's famous jet, for example, has not been well resolved in the transverse direction. One of the better-resolved cases in a strong source is one that I have been working on, 3C219 (see Astron.J., vol 92, p.537 and 538). I have just got VLA time for a higher-resolution crack at this one at 8.3 GHz, it will be observed some time later this summer.

Best wishes, Alan

From root Mon Jul 22 13:16:44 1991
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          id AA27972; Mon, 22 Jul 91 13:16:40 -0400
Message-Id: <4050A5DD08FF0076A2@DBV>
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X-Vms-To: A_BRIDLE
From: SWAI@db1.cc.rochester.edu
To: abridle@cvax.cv.nrao.EDU
Subject: report
Date: Mon, 22 Jul 91 13:20 EDT

Alan,

Sorry about the email delay. After some more jumping around, I started reading "BJA" in a more sequential manner. There have been several major distractions recently so I have relatively little to report this time. However, in the next couple of weeks, Dan and Hugh will be concentrating on jets again so I'll be able to devote some more time to jets again for my "homeworks".

Mark

From root Tue Sep 3 14:34:09 1991
X-VM-Summary-Format: "%n %*%a %-17.17F %-3.3m %2d %4l/%-5c %I\"%s\"\n"
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"9" nil nil (number " " mark " R SWAI@db1.cc.roche Sep 3   11/494   " thread-
indent "\"prelims\"\n") nil]
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          id AA32682; Tue, 3 Sep 91 14:34:07 -0400
Message-Id: <1E7CC576FDBF205DBD@DBV>
X-Envelope-To: abridle@cvax.cv.nrao.EDU
X-Vms-To: A_BRIDLE
From: SWAI@db1.cc.rochester.edu
To: abridle@cvax.cv.nrao.EDU
Subject: prelims
Date: Tue, 3 Sep 91 14:30 EDT

Alan,

I though I would resurface briefly to give you a quick update. The written part of the prelim exam will be given Monday and Tuesday of next week (Sept. 9 and 10). In all likelihood, I will have an oral as well which will occure Wensday or Thursday of the same week. Friday the 13th official notice of the exam results is given. As soon as I know the outcome I'll email you however, I am assuming that it will be satisfactory. It will certainly be a relief to get this over.

- Mark

From abridle Tue Sep 3 15:48:22 1991
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
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Sep 3   3/74   " thread-indent "\"Re: prelims\"\n") nil]
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References: <1E7CC576FDBF205DBD@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: prelims
Date: Tue, 3 Sep 91 15:48:05 -0400

Thanks for the note. I hope all will go well for you!

Best wishes, Alan

From abridle Thu Sep 26 18:26:50 1991
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
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References: <0C5D0BDC6FBF21806E@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: visit
Date: Thu, 26 Sep 91 18:26:35 -0400

Either the October or around-Thanksgiving times would be o.k for me, but
there are a few constraints:

I'll have a visitor here from the 25th to the 27th of November, David
Clarke from U. of Illinois who is working on numerical MHD models of
jets in three dimensions. We'll be trying to get some data reduced
and some theoretical ideas discussed, so there would not be time on
those days for you and I to go into details re your thesis
possibilities - but it might be very useful for you to sit in on our
discussions while David is here. Wayne Christiansen from North
Carolina may also come through here on those same days to make it a
three-way discussion about jet and lobe physics. So if you do come in
November we should review your thesis topics either before the 25th or
after David leaves on the 27th, and you might like to sit in with us
on the 25th and 26th. Would this create problems with your
Thanksgiving plans? If so, it would be better or me if you came the
following week (starting December 2nd) if you can be away from your TA
work then.

For October, I'll get back to C'ville late on the 16th, and will
have the 17th and 18th free. I agree that if you'd like to take more time
to think things over and read, it would be better to wait until you feel
you've done that satisfactorily.

Have you thought any more about when you'd like to move here? You should

probably know that this place will be very chaotic for the first 6 months of 1992. There are about a dozen people coming here from all over the world to participate in a new image-processing software project. We'll have the place bulging at the seams with visitors and every office corner and workstation in the place will be in huge demand. Things should be vastly saner by May or June. I will also have to put a lot of time into this software visitation as the project is one of my responsibilities around here. So it will be much saner if you plan to start here later rather than sooner. The scale of this project, and its impact on space and resources in this building, has magnified enormously in the last month or so, which is why I didn't mention it before. If you move down here in mid-summer or thereabouts, only the remnants of this chaos should remain here. One of the remnants should be a SPARC station that I have asked the computer division to earmark for you to use, and a desk to put it on and a chair to sit at!

Cheers, Alan

From root Wed Nov 6 11:45:28 1991
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
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X-Vms-To: A_BRIDLE
From: SWAI@db1.cc.rochester.edu
To: abridle@cvax.cv.nrao.EDU
Subject: thesis topic/rochester computer resources
Date: Wed, 6 Nov 1991 11:42 EST

Alan,

I am leaning toward doing the single source project. Is the designation
of the source 3C 253 or 3C252; I don't recall. On issue we talked about
before was the necessity of return currents if the jets did not have a
net neutral charge. Wouldn't these return currents be seen? Presumably we
should see synchrotron radiation from the return currents. If the jets have
a net neutral charge, it seems that they would most likely be made up of
electrons and protons or electrons and positrons. If the jets were made up
electrons and positrons, then I would expect to see x-ray recombination lines
associated with the lobes where the jet material slows down. If the jet is an
electron
-proton mixture, the I would expect to see H1 regions associate with the lobes.
Are eithere the x-ray recombination lines or H1 regions seen? All this is
operating on the assumption that the jet material slows down enough in
the lobes to support recombination. Perhaps when I read further all this will
be explained. Of of the difficulties I encounter is that as I start reading,
myquestions far outstrip my reading rate.

I may have a problem with machine access next semester. If I do the 3C 253/2
project, what sort of resources do I need just to get started? Are there thingsI
can do in Rochester during the spring semester which don't require 500 meg
of disk? The story here is that AIPS is installed on some of the machines in\
the Graphics Lab but that it doesn't work fully and the support from the
Graphics Lab is non-existant. Also, disk space is limited to a couple hundred
meg. Perhaps you could purchase the right to more disk space but I don't
know the details. I'
(oops)
I'm keeping my ear to the ground for other spark station possibilites but for
the time being, the Graphics Lab is the only resource I have access to.

From root Mon Dec 2 10:15:41 1991
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["484" "Mon" "2" "December" "1991" "10:14" "EST" "SWAI@db1.cc.rochester.edu"
"SWAI@db1.cc.rochester.edu" "<01GDMU348PHC9354JK@DBV>" "12" "thesis
topic/computers" nil nil nil "12" nil nil (number " " mark " R SWAI@db1.cc.roche
Dec 2   12/484   " thread-indent "\"thesis topic/computers\"\n") nil]
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Received: from cvax.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA20325; Mon, 2 Dec 91 10:15:40 -0500
Message-Id: <01GDMU348PHC9354JK@DBV>
X-Envelope-To: abridle@cvax.cv.nrao.EDU
X-Vms-To: A_BRIDLE
From: SWAI@db1.cc.rochester.edu
To: abridle@cvax.cv.nrao.EDU
Subject: thesis topic/computers
Date: Mon, 2 Dec 1991 10:14 EST

Alan,

I think I would like to do the single source project. Is that ok by you?

Can AIPS be installed on a SPARC IPC? Does a SPARC IPC (roughly the
same as a SPARC 1) have enough horse power? Dan Watson is getting a
SPARC IPC in the next month or so. One of his ideas is that I could
take it to C'ville in the back of a car and let the AIPS gurus there
set up AIPS. Every attempt to set up AIPS at Rochester has ended in
failer so far. Also, can AIPS run on an ALIENT?

Mark

From abridle Mon Dec 2 10:55:23 1991
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["141" "Mon" "2" "December" "91" "10:55:04" "-0500" "Alan Bridle" "abridle "
nil "3" "Re: thesis topic/computers" nil nil nil "12" nil nil (number " " mark "
Alan Bridle   Dec 2   3/141   " thread-indent "\"Re: thesis
topic/computers\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA19054; Mon, 2 Dec 91 10:55:04 -0500
Message-Id: <9112021555.AA19054@polaris.cv.nrao.edu>
References: <01GDMU348PHC9354JK@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: thesis topic/computers
Date: Mon, 2 Dec 91 10:55:04 -0500

We have AIPS running on an IPC here. It might be simpler to transfer
AIPS binaries from that by ftp. I'll talk to the AIPS guys about it.

From abridle Mon Dec 2 10:56:54 1991
X-VM-v5-Data: ([nil
 nil nil nil nil nil nil nil nil]
      ["108" "Mon" "2" "December" "91" "10:56:43" "-0500" "Alan Bridle" "abridle "
nil "3" "Re: thesis topic/computers" nil nil nil "12" nil nil (number " " mark "
Alan Bridle   Dec 2   3/108   " thread-indent "\"Re: thesis
topic/computers\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA19069; Mon, 2 Dec 91 10:56:43 -0500
Message-Id: <9112021556.AA19069@polaris.cv.nrao.edu>
References: <01GDMU348PHC9354JK@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: thesis topic/computers
Date: Mon, 2 Dec 91 10:56:43 -0500

Do you mean an ALLIANT? AIPS is running on some Alliants in the
U.K., I think in a 4-processor version.

From abridle Mon Dec 2 11:28:47 1991
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["358" "Mon" "2" "December" "91" "11:28:22" "-0500" "Alan Bridle" "abridle "
nil "6" "Re: thesis topic/computers" nil nil nil "12" nil nil (number " " mark "
Alan Bridle   Dec 2   6/358   " thread-indent "\"Re: thesis
topic/computers\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA29783; Mon, 2 Dec 91 11:28:22 -0500
Message-Id: <9112021628.AA29783@polaris.cv.nrao.edu>
References: <01GDMU348PHC9354JK@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: thesis topic/computers
Date: Mon, 2 Dec 91 11:28:22 -0500

PS. yes, it's ok by me for the 3C353 project! We should put in some proposals for the new observations you'll need, essentially all configurations at 8 GHz! Stefi Baum (who has been involved in the existing observations) will be here in a couple of weeks and she has some optical spectroscopy on 353. I'll talk with her about optical follow-ups as well.

From abridle Tue Dec 3 15:36:04 1991
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1361" "Tue" "3" "December" "91" "15:35:24" "-0500" "Alan Bridle" "abridle "
nil "22" "Re: thesis topic/computers" nil nil nil "12" nil nil (number " " mark "
Alan Bridle   Dec 3   22/1361 " thread-indent "\"Re: thesis
topic/computers\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA25058; Tue, 3 Dec 91 15:35:24 -0500
Message-Id: <9112032035.AA25058@polaris.cv.nrao.edu>
References: <01GDOHQENNYO93555L@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: thesis topic/computers
Date: Tue, 3 Dec 91 15:35:24 -0500

Nope. It languished unstudied for about 20 years by being close to the equator and to the Galactic plane. I'll put together a "fact sheet" for you, but you'll be surprised how little is there! I suggest instead that you read all you can your hands on about Cygnus A and M87, the two best-studied bright radio galaxies. Start with index in "Beams and Jets in Astrophysics" under these sources, and follow all the recent observational references in there, but particularly the radio ones (Owen, Biretta and company for M87, Carilli, Perley and company for Cygnus). Look at what they do with structural data and polarimetry, for jets and lobes, and with multi-frequency observations. Then think about having the VLA data at 1.4, 4.9, 8.4 and 14.5 GHz at least (1.4, 4.9 and 14.5 are already in hand but still some further image improvement needed, 8.4 will have to be proposed and done). I'll mail you copies of our 3C353 proposals and of the poster paper we gave at the AAS a while back. That's really all the 353-specific context that exists, as it's the Forgotten Radio Source because of its double-coincidence with the two equators! (Which no longer matters now we have interferometers in the North-South direction).

The bad news is that there's not much about it in the literature. The good news is that it's unspoiled territory, virgin forest, etc.

From abridle Sat Dec 14 14:22:56 1991
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["2564" "Sat" "14" "December" "91" "14:22:56" "-0500" "Alan Bridle" "abridle
" nil "46" "Workstation for Mark Swain" nil nil nil "12" nil nil (number " " mark "
Alan Bridle   Dec 14   46/2564 " thread-indent "\"Workstation for Mark
Swain\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA31265; Sat, 14 Dec 91 14:22:56 -0500
Message-Id: <9112141922.AA31265@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: gcroes, bburns
Subject: Workstation for Mark Swain
Date: Sat, 14 Dec 91 14:22:56 -0500

When I talked with Bob (Burns) about this topic last week I was somewhat surprised to hear that Geoff had not mentioned it to him based on our earlier conversation. I am presuming that this was just an oversight on Geoff's part, as the time frame is (just) "post-aips++-deluge", but this will put in writing what I had requested earlier from Geoff, just for the record.

Mark Swain is a Ph.D. student presently at the University of Rochester. In June or July of 1992, exact date still to be determined, he will be joining the NRAO Ph.D. student program to work under my direction on the research part of his Ph.D. (I think his official title while at NRAO will be Junior Research Associate or something like that). He will be working on a project that will involve the reduction of some very large VLA continuum data sets (wide-field imaging of multi-configuration data). In the past, I have done similar projects on the Convex C-1, where I experience at best 24-hour real time performance on individual iteration steps in the self-calibration, and several days of real time for a typical image deconvolution, when running as the only major AIPS user in the C-1. Thus, under ideal conditions with no other major user, the calibration of a single VLA configuration for this sort of work takes about a week of real time, and imaging at least another week. Mark's project will involve many such self-calibrations (with typically 5 to six such iterations per calibration), and the construction of tens of images that will require such deconvolutions. We are therefore looking at reductions that would take several months of C-1 real-time even in the absence of other major users of that machine.

Mark will also need access to a personal workstation for the general computing that will be required for his thesis.

This is therefore to formalize my earlier request that he be assigned one of the enhanced-disk SPARC-2 stations from the Charlottesville workstation complement when he arrives. On the assumption that this workstation complement will only barely cover the CV staff needs, I will balance this request for a SPARC-2 for Mark by not requesting a UNIX workstation at this stage for myself. I will instead continue using a PC-386 as at present for my personal and observatory work. I will, however, expect to do some of my own AIPS data reduction on the SPARC-2 that I am requesting for Mark, and to take this workstation over for my own use when his Ph.D. thesis is completed in 1994.

Please let me know if any clarification is needed.

Alan B.

From abridle Tue Jan 7 18:13:59 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["737" "Tue" "7" "January" "92" "18:13:58" "-0500" "Alan Bridle" "abridle "
nil "17" "Copy FYI re M. Swain arrival" nil nil nil "1" nil nil (number " " mark "
Alan Bridle   Jan 7   17/737   " thread-indent "\"Copy FYI re M. Swain
arrival\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA21641; Tue, 7 Jan 92 18:13:58 -0500
Message-Id: <9201072313.AA21641@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: ghunt
Subject: Copy FYI re M. Swain arrival
Date: Tue, 7 Jan 92 18:13:58 -0500

------- Start of forwarded message -------
X-VM-v5-Data: ([nil nil nil nil nil nil t nil nil]
      ["193" "Mon" "23" "December" "91" "16:41:47" "-0500" "Alan Bridle" "abridle "
nil "5" "M.Swain arrival data" "^From:" nil nil "12"])
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA26232; Mon, 23 Dec 91 16:41:47 -0500
Message-Id: <9112232141.AA26232@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: gcroes, rburns
Subject: M.Swain arrival data
Date: Mon, 23 Dec 91 16:41:47 -0500

I have just talked with my student, Mark Swain, to determine his arrival
date in C'ville next summer. We have settled on July 1. This is for your
records re his workstation assignment.

Alan
------- End of forwarded message -------

From abridle Wed Jan 22 15:28:44 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1078" "Wed" "22" "January" "92" "15:28:24" "-0500" "Alan Bridle" "abridle "
nil "24" "Proposal" nil nil nil "1" nil nil (number " " mark "   Alan Bridle
Jan 22   24/1078 " thread-indent "\"Proposal\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA25521; Wed, 22 Jan 92 15:28:24 -0500
Message-Id: <9201222028.AA25521@polaris.cv.nrao.edu>
References: <01GD91P9K4OG9350CN@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Proposal
Date: Wed, 22 Jan 92 15:28:24 -0500

I have the reproductions from the slide now. They look very good
indeed and Figure 1 of the proposal will therefore be in great shape.

I have also just received from the VLA archive a copy of the tape with
the 6cm A configuration data that had gone missing from Stefi's
collection. This should permit imaging of the whole structure at 0.4"
resolution when it is calibrated and combined with the existing 6cm
data. That will be one of the first big data-processing steps for
you! This merging will probably be best done after you are here in
July. (It will probably best for you only to try your hand at image
deconvolution and combination until we have had the chance to spend
some time together on the primary calibration and image-formation
techniques.)

I'm involved in meetings for most of the rest of the week but I'll
keep my eye open meanwhile for your comments in the proposal
 draft.
I'll plan to work on the proposal properly next Monday, after these
meetings are over. So send me an E-mail any time that you can fit
it in before or during the weekend.

Alan

From abridle Wed Jan 22 15:53:03 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["2112" "Wed" "22" "January" "92" "15:52:08" "-0500" "Alan Bridle" "abridle "
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Jan 22 39/2112 " thread-indent "\"Re: proposal\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA24431; Wed, 22 Jan 92 15:52:08 -0500
Message-Id: <9201222052.AA24431@polaris.cv.nrao.edu>
References: <01GFMDXEZIYO9JD7JE@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: proposal
Date: Wed, 22 Jan 92 15:52:08 -0500

That's where the "Synthesis Imaging" book will be indispensible for you.
What I do have is a Lotus 1-2-3 spreadsheet that I developed to
organize and automate many of the calculations that are needed for
planning VLA observing. That's one thing I could send you over
the net or on a diskette if you'd like to kick the process around
a bit on a PC.

Basically, for the D array we are doing only a short observation, so
the HA affects two things: 1) whether we can get to the master
flux density and polarization calibrator (3C286) well above the
horizon and 2) how the configuration of baselines is foreshortened
by projection towards 3C353. I want -4h to optimize our look at
the calibrator and to foreshorten the baselines enough to sample
the large-scale structure of 3C353 better. For the more widely
separated arrays, we're doing long enough observations that the
baselines among the arms will have time to fully rotate across
each other and thus "close the coverage up" (at least as well
as one can for a source close to the equator). In this case
the precise HArange is less important. For the B and A arrays
we're asking for 10h, which is pretty much the full length of
time that 3C353 itself is above the horizon (I will spell that out
in the next draft so that the referees appreciate where the 10h
has come from!).

The reason for needing much more time in the extended arrays is
of course to preserve sensitivity to resolved structure (the
ideal would be to reach the same surface brightness sensitivity
in all configurations but this is not do-able in practice at the
highest resolutions because the observing times would become enormous).
30-min, 4-h, 10-h is taken as a bit of a compromise between the
needs of filling up the baseline-sampling domain (the u,v plane in
the usual notation), of getting a reasonably matched surface
brightnes sensitivity, and of not having observations that are
either ridiculously short or ridiculously long. The former
may "get lost" if we have any kind of system problem, and the
latter simply won't get scheduled through the refereeing
system!

Cheers, A.

From abridle Fri Jan 24 15:10:17 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["2178" "Fri" "24" "January" "92" "15:09:55" "-0500" "Alan Bridle" "abridle "
nil "40" "spreadsheets" nil nil nil "1" nil nil (number " " mark " Alan Bridle
Jan 24 40/2178 " thread-indent "\"spreadsheets\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA26561; Fri, 24 Jan 92 15:09:55 -0500
Message-Id: <9201242009.AA26561@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: spreadsheets
Date: Fri, 24 Jan 92 15:09:55 -0500

I just put some software and docs into the first-class mail for you.

On one 720k 3.5 inch diskette, the two spreadsheets that I have used
for VLA observation planning, VLAPLAN3 and VLAUVPL, with a couple
of doc files (README and PLANDOCS.TXT).

On another, a copy of my old (1986) Lotus 1-2-3 V2.0 Sounds like your
copy is Version 1A, and these won't run with that. I've stopped using my
2.0 so I guess it's only mildly illegal for you to have a copy of it.
Don't pass it around to anyone else, but it seems silly for you not to
take a look at these calculations because your Lotus is out-of-date when
I have an obsolete 6-year old copy that will run them!

I'm also sending you in the same package (a) a printout of the last
"published" (NRAO memo series) doc on these spreadsheets, and (b) a
copy of the lecture from the "Synthesis Imaging" workshop whose content
they are meant to encapsulate. The lecture is not stand-alone, though,
it draws heavily on the contents of earlier ones in the series so you
may still have to wait until you have a copy of the whole book for parts
of it to make much sense. But in case this much is helpful to you, it
may be a start ....

The program documentation talks about an "NRAO distribution diskette" for
the spreadsheets. This isn't want I've sent you. To simplify matters,
I've just sent you the .WK1 files, which you can simply read straight
into Lotus. So skip the unpacking and "installation" instructions and
go directly to running the spreadsheets as you would any others.

These materials are not, of course, the ideal introduction to VLA
proposal design, but rather a toolkit for people who know the basics
already. Still, they may serve to show you what the issues are, and
the spreadsheets may give you something to kick the problem around
with once you do get a copy of "Synthesis Imaging" and get a chance to
look at a full exposition of the problems. If it's very inefficient
and time-consuming, it can all wait 'til you're here. We'll either
have some more proposals of your own for you to organize, or you can
rough some out for another project to be sure you have thought the
problems through!

Cheers, Alan

From abridle Tue Jan 28 15:47:31 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["873" "Tue" "28" "January" "92" "15:47:03" "-0500" "Alan Bridle" "abridle "
nil "20" "Next draft of 3C353 proposal" nil nil nil "1" nil nil (number " " mark "
Alan Bridle   Jan 28   20/873   " thread-indent "\"Next draft of 3C353
proposal\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA26129; Tue, 28 Jan 92 15:47:03 -0500
Message-Id: <9201282047.AA26129@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu, sbaum@stsci.bitnet
Subject: Next draft of 3C353 proposal
Date: Tue, 28 Jan 92 15:47:03 -0500

I've munged some more on text for the 3C353 VLA 8-GHz proposal, and
here's the present draft. (Mark has seen an earlier version, this is
first version for Stefi).

If you have time, take a look at it and give me any comments. It
has to be submitted by the end of the week. The photos for Fig.1 are
done.

Stefi - how about a "proper" optical followup, rather than the
borrowed time we've had so far? There was a hint of emission lines
near the jet in the older data, plus the obvious question about the
cold spot region. What might be the best instrument to go for to
pull out fainter line emission than was found in your thesis?
It's also notable that the "little disk" of emission in 353 was
approximately perpendicular to the jet. Any way we could go after
that spectroscopically, e.g. to see if it is rotating? Would need
good angular resolution.

Cheers, Alan

From abridle Tue Jan 28 15:48:40 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["7830" "Tue" "28" "January" "92" "15:48:04" "-0500" "Alan Bridle" "abridle "
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mark " Alan Bridle Jan 28 140/7830 " thread-indent "\"Sent last message
without this!\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA04424; Tue, 28 Jan 92 15:48:04 -0500
Message-Id: <9201282048.AA04424@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu, sbaum@stsci.bitnet
Subject: Sent last message without this!
Date: Tue, 28 Jan 92 15:48:04 -0500

==========text follows==========

8-GHz imaging of the radio galaxy 3C353

Mark Swain (U.Rochester)
Alan Bridle (NRAO-CV), Stefi Baum (STScI)

We wish to image the radio galaxy 3C353 at up to 0.65" resolution using the VLA B,C and D configurations at X Band. These data will complement existing L, C and U Band syntheses (VLA proposals AB352 and AB389) for continuum spectroscopy and polarimetry at constant angular resolution (about 1.2"). We also ask for the A configuration at X Band to examine the internal structures of the jets, hot spots and filaments at up to 0.22" resolution. These new observations, and the analysis of the entire multi- frequency database, will be a major part of Mark Swain's Ph.D. thesis.

3C353, a 15.4-magn E galaxy in a Zwicky cluster at z = 0.0304, is a wide-lobed double radio source about 120 kpc in extent (H = 100) and emitting about a hundredth the radio power of Cygnus A. Although 3C353 is the fourth brightest radio galaxy in the 3C Catalogue (57 Jy at 1.4 GHz), it was under-studied at radio wavelengths until recently because its -0.9o declination and 19.6o galactic latitude eliminated it from "standard" complete samples that were defined for work with East-West interferometers during the 1960s and 1970s. VLA proposals AB352 and AB389 began to rectify this neglect with multi-configuration syntheses at 1.2" resolution at 1.38, 1.67, 4.9 and 14.5 GHz, and additional data at 22 GHz in the D array and at 4.8 and 14.5 GHz in the A array. These data show (Bridle and Williamson 1990) that 3C353 has an unusually rich internal structure (Figure 1), dominated by a complex of large- scale filaments. These filaments have the following properties:

(a) they are typically tens of kpc long and a kiloparsec across,
(b) they are highly (50% to 75%) linearly polarized and
(c) they have high emissivity contrast (10x to 30x enhancement) with other lobe emission,

(d) their 1.4-14 GHz continuum spectra are not identical either to one another or the other lobe emission, some filaments having flatter and others steeper than the average for the lobe.

There are also apparently "dark" filaments. Some obvious examples (e.g. in the north part of the east lobe) clearly adjoin bright filaments. This suggests filament pairing, with regions between

members of a pair appearing dark by contrast (Such "pairs" may thus be describable as edge-brightened "ribbons"). Not all dark features in 3C353 fit this description, however. The relationship between apparently bright and apparently dark filaments could be clarified by continuum spectroscopy snd polarimetry at fixed resolution, and by imaging with good sensitivity at higher resolution. One clear "anomaly" is the prominent, round, "cold spot" in the East lobe, which has about the same FWHM (4" - 1.7 kpc if at the distance of 3C353) and fractional depth (about one-half of the surrounding emission) at all frequencies from 1.38 to 14.5 GHz. This "cold spot" is not clearly an interstice that is defined by the surrounding bright features. It is hard to explain by any isotropic thermal (free-electron) or nonthermal (relativistic-electron) absorption or scattering mechanism, as there is no foreground galaxy to provide the material for the absorber. It might be a purely "geometrical" effect (an accidentally aligned "tunnel" through the filament complex) or a cylindrical high-field region from which particles have been excluded. Alternatively, if the apparently dark and light filaments reflect anisotropic emission by particles streaming along well-ordered fields, the "cold spot" might be a filled but well-aligned "dark" filament.

Models of such filamentation in radio galaxies range from cooling instabilities to field amplification at loci of high shear (which have been found to develop filamentary forms in recent 3-d MHD models by Clarke and Norman (1992)). The detailed distributions of spectral index, spectral curvature and Faraday-corrected polarization across the filament complex can provide new constraints for such models. Imaging with good sensitivity at high angular resolution should also separate individual filaments better, and determine the internal brightness profiles of resolved filaments, of which there are several.

The jet, counterjet and hot spots are all resolving at 1.2" FWHM, and exhibit much internal structure, including misaligned knots and limb-brightening in the jets, and "streamers" emanating from the hot spots. The Faraday RM varies smoothly across the West (counterjet) lobe but in the East (jetted) lobe it has significant substructure near the hot spot and in long filaments that cross the intensity features. At these RM filaments and in a few compact knots there is significant low-frequency depolarization, but these structures are not well-resolved at 1.2" FWHM.

M.Swain's Ph.D. thesis will therefore examine the distributions of spectral index, spectral curvature, rotation measure, depolarization, and magnetic field in the lobes, filaments, hot spots and jets of 3C353, for comparison with those of the other bright radio galaxies that have been imaged in comparable detail -- Cyg A, Fornax A and M87. This study needs a full 8-GHz data set for 3C353 for several reasons. First, the 14.5 GHz data which now "anchor" the upper end of the spectrum for the fainter extended features (only the brightest substructure is detected at 22 GHz), are limited in accuracy by: (a) relatively poor sensitivity, (b) imprecision in the mosaicing of the whole source by uncertainties in the correction for the VLA primary beam at 14.5 GHz, and (c) the inability of the D array to sample all of the large-scale structure properly at 14.5 GHz. These limitations could be all removed by 8-GHz data that would (a) be more sensitive, (b) have smaller primary-beam corrections and (c) sample the largest scales better. For example, the complex of transverse filaments in the inner part of the West lobe appears to have a flatter spectrum than the rest of the lobe between 4.9 and 14.5 GHz, similar to that of the

hot spots. This spectral flattening is not expected in diffusive models of particle transport in the lobes, but might be understood if the filaments have curved spectra and contain enhanced magnetic fields. Precise spectral imaging of 3C353 may therefore be able to constrain models of filament formation and of particle transport in the lobes, but our 14.5 GHz data are of marginal quality for this.

High signal to noise is needed to define the high-frequency spectra of the filaments, jet and counterjet better. High angular resolution is needed to display their internal intensity and magnetic structures and to elucidate the question of possible filament "pairing". The following 8-GHz observations would provide definitive high-frequency imaging:

D array: 30 min at about -4h HA to sample the short spacings and observe 3C286 to calibrate polarization p.a. We ask to co-ordinate this with another observer's 8- GHz run to determine the on-axis instrumental polarization properties.

C array: 4 hrs to provide intermediate baselines for the whole-source synthesis.

B array: 10 hrs to provide long baselines for a whole-source synthesis at up to 0.67" resolution. These data would be tapered to 1.2" resolution for spectral curvature analysis at 1.4, 1.7, 4.9, 8.4 and 14.5 GHz, and used directly with the 4.9 GHz data for limited spectral and RM imaging of fine structure at 0.67" FWHM.

A array: 10 hrs to image the brightest fine structure in the hot spots, jets and filaments at 0.22" (80 pc) resolution.

Figure 1: glossy print of the L_band composite intensity image (looks very nice!)

References: to be added

==========end of text==========

From abridle Fri Jan 31 14:07:23 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["88" "Fri" "31" "January" "92" "14:07:23" "-0500" "Alan Bridle" "abridle "
nil "7" "Mark Swain's address" nil nil nil "1" nil nil (number " " mark "   Alan
Bridle   Jan 31   7/88   " thread-indent "\"Mark Swain's address\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA24069; Fri, 31 Jan 92 14:07:23 -0500
Message-Id: <9201311907.AA24069@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: rbrown
Subject: Mark Swain's address
Date: Fri, 31 Jan 92 14:07:23 -0500

is:

Department of Physics & Astronomy
University of Rochester
Rochester
NY 14627-0011

From root Mon Apr 6 17:00:53 1992
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["2613" "Mon" "6" "April" "1992" "16:55" "EST" "SWAI@db1.cc.rochester.edu"
"SWAI@db1.cc.rochester.edu" "<01GIJ8SW4GCW8ZE7GV@DBV>" "46" "Re: How's it going?"
nil nil nil "4" nil nil (number " " mark " R SWAI@db1.cc.roche Apr 6   46/2613
" thread-indent "\"Re: How's it going?\"\n") nil]
      nil)
Received: from db1.cc.rochester.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA41900; Mon, 6 Apr 92 16:00:52 -0500
Received: from DBV by DBV (PMDF #12506) id <01GIJ8SW4GCW8ZE7GV@DBV>; Mon,
 6 Apr 1992 16:55 EST
Message-Id: <01GIJ8SW4GCW8ZE7GV@DBV>
X-Envelope-To: abridle@polaris.cv.nrao.EDU
X-Vms-To: IN%"abridle@polaris.cv.nrao.EDU"
From: SWAI@db1.cc.rochester.edu
To: abridle@polaris.cv.nrao.edu
Subject: Re: How's it going?
Date: Mon, 6 Apr 1992 16:55 EST

We got the SUN finally; I have yet to install AIPS on it. I have been
trying to estimate the flux from FeIVX in the lobes. The FeIVX line is
at 530.3 nm; numbers for that transition are HARD to find. I'm still
chasing numbers for the collision strength and relative abundence of
FeIVX to Fe at 10^6 deg. Just today, I got some refferences form a solar
astronomer at NOAO (or something like that). We'll see if they pan out.

I presented the Perly et al. paper on the spectral aging of the lobes of
Cygnus A and learned a lot. I guess there is no chance we could preform
such an anlysis on 3C353; it looked like they had LOTS of observations.
I think they had 15 different frequencies for thier 4.5 arc sec resolution
immages. With the rich structure exibited in 3C 353 we might find that the\
spectral aging contours are not as uniform. It would be interesting to see
if the break frequency of the filiments is different from that of the lobes
or if the injection indices match.

It's ironic that you sent me a message when you did. I sent a message to
you Friday March 27. I must have made a mistake in the address because

today I found lots of "undelivered mail" messages from mailer demons.
It turns out that I was in Charlottesville Tues->Fri of last week. I
wanted to drop by to chat and do some free copying of thesis related
materials. Since I didn't get a reply from you, I assumed you were out
of town, not that I had made a mistake with the email address. (I have
a script set up so that I type your name and it automatically fills in
your address - this has worked just fine in the past) I intended to try
to telephone you while I was in C'ville but I was swamped with the closing
on our house. In addition to the closing, I gutted the basement appartment
clear down to the stud walls - this included removing the ceeling. Sorry
we missed each other.

Melanie was acceptd by UVA and decided to transfer. It will certaintly make
me happier to have her in Charlottesville than in Rochester for the summer
and fall semester (the summer and fall semeter are when she would have
stayed in Rochester to finish class work).

I start work on a presentation soon for my astrophysical MHD class soon.
Naturally, it will be on MHD models for jets. Jets have been completely
neglected in our course. Currently I know how to write down the induction
equation and a few other equations and solve them for a few, simple, contrived
systems. Hopefully
I'll learn a little about how to apply them to jets.
Got any favorite papers to suggest?

Grading and homework continue as usual.

Mark

From abridle Tue Apr 7 17:25:13 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["2185" "Tue" "7" "April" "92" "17:25:02" "-0400" "Alan Bridle" "abridle "
nil "44" "Re: How's it going?" nil nil nil "4" nil nil (number " " mark "   Alan
Bridle   Apr 7   44/2185 " thread-indent "\"Re: How's it going?\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA14644; Tue, 7 Apr 92 17:25:02 -0400
Message-Id: <9204072125.AA14644@polaris.cv.nrao.edu>
References: <01GIJ8SW4GCW8ZE7GV@DBV>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Re: How's it going?
Date: Tue, 7 Apr 92 17:25:02 -0400

Hi there Mark,

Thanks for your message. Sorry we missed while you were here, but I can see you've been pretty busy. Glad to hear that Melanie was accepted at U.Va., that simplifies matters for you a whole lot!

We will not be able to do as extensive an analysis on 3C353 as was done for Cygnus, but we will still have 5 pretty good frequencies with which to look at spectral ageing. The huge number of frequencies for Cygnus was needed really because of the high rotation measures, and they were trying to constrain the RM amplitude by having many frequencies per band. We know that for 353 the RM's are much more normal (except for a few small regions in which we may have to be careful to look for possible ambiguities in the data that we do have). For spectral purposes, the close frequencies tell you very' little, and our coverage will be about the same as the Cygnus coverage for most purposes.

There's not a lot out there on MHD models for jets that isn't covered in Jean Eilek's chapter in The Book.

As for thermal electron densities, we don't have direct constraints from the radio data for lobes in radio galaxies (you'd really need to detect the internal depolarization for that, though the absence of such will give upper limits). What we do know is estimates of the ambient density from X-ray continuum observations of clusters -- you could take a standard cluster and a cooling flow as two cases. But the question of how much of the ambient gets into the lobes by entrainment across the boundary is very controversial. In an extreme case, it could be zero.

The Cyg A case as described by Perley et al. is probably close to an upper limit for most radio galaxies, as it's a strong colling flow with very high RM's. We don't of course know how much of that stuff is really inside the radio emitting region but the ambient is pretty well taken case of there. The only other case that's as well studied is Virgo A (M87).

I'll be hard to get hold of in about 3-4 weeks' time. We're selling our house and moving so chaos will reign for a while. I'll try to check E-mail while confusion reigns but may be particularly out of it for the first week of May!

From root Mon May 4 12:29:00 1992
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["453" "Mon" "4" "May" "1992" "12:29" "EDT" "SWAI@db1.cc.rochester.edu"
"SWAI@db1.cc.rochester.edu" "<01GJM3OABAI8984WMH@DBV>" "13" "salary" nil nil nil
"5" nil nil (number " " mark " R SWAI@db1.cc.roche May 4   13/453   " thread-
indent "\"salary\"\n") nil]
      nil)
Received: from db1.cc.rochester.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA28540; Mon, 4 May 92 12:28:50 -0400
Received: from DBV by DBV (PMDF #12506) id <01GJM3OABAI8984WMH@DBV>; Mon,
 4 May 1992 12:29 EDT
Message-Id: <01GJM3OABAI8984WMH@DBV>
X-Envelope-To: abridle@polaris.cv.nrao.EDU
X-Vms-To: A_BRIDLE
From: SWAI@db1.cc.rochester.edu
To: abridle@polaris.cv.nrao.edu
Subject: salary
Date: Mon, 4 May 1992 12:29 EDT

Alan,

Hugh and Dan need to know how Rochester makes it's monthly contribution
to my salary. Maybe something official needs to be sent to the U of R
physics dept.

I am moving to C'ville May 19 or 20. My C'ville phone number is 295-0294.
I'll give you a call something during the last week of May. I will not
be able to read mail email on at my Rochester account after May 15.

What is the status on our proposal?

I can't wait to get to started! :)

From root Thu May 14 11:45:09 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["313" "Thu" "14" "May" "1992" "11:46" "EDT" "SWAI@db1.cc.rochester.edu"
"SWAI@db1.cc.rochester.edu" nil "5" "Re: salary" nil nil nil "5" nil nil (number "
" mark "   SWAI@db1.cc.roche May 14   5/313   " thread-indent "\"Re: salary\"\
n") nil]
      nil)
Received: from db1.cc.rochester.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA06127; Thu, 14 May 92 11:45:09 -0400
Received: from DBV by DBV (PMDF #12506) id <01GK012W39K098535N@DBV>; Thu,
 14 May 1992 11:46 EDT
Message-Id: <01GK012W39K098535N@DBV>
X-Envelope-To: abridle@polaris.cv.nrao.EDU
X-Vms-To: IN%"abridle@polaris.cv.nrao.EDU"
From: SWAI@db1.cc.rochester.edu
To: abridle@polaris.cv.nrao.edu
Subject: Re: salary
Date: Thu, 14 May 1992 11:46 EDT

I'll be in C'ville starting the 20th. I would like to stop in and get
an email account so that I can contact Hugh and Dan about salary details.
I got something back from the VLA proposal refs. but I can't figure out
wheather we got all our time or not. I'll give you a phone call at NRAO
mid to late next week.

From root Thu May 14 12:00:10 1992
X-VM-v5-Data: ([nil nil nil nil t nil t nil nil]
["576" "Thu" "14" "May" "1992" "12:01" "EDT" "SWAI@db1.cc.rochester.edu"
"SWAI@db1.cc.rochester.edu" "<01GK01LY5UV49I56AL@DBV>" "18" "Re: salary" nil nil
nil "5" nil nil (number " " mark " R SWAI@db1.cc.roche May 14   18/576   "
thread-indent "\"Re: salary\"\n") nil]
nil)
Received: from db1.cc.rochester.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA12634; Thu, 14 May 92 12:00:09 -0400
Received: from DBV by DBV (PMDF #12506) id <01GK01LY5UV49I56AL@DBV>; Thu,
14 May 1992 12:01 EDT
Message-Id: <01GK01LY5UV49I56AL@DBV>
X-Envelope-To: abridle@polaris.cv.nrao.EDU
X-Vms-To: IN%"abridle@polaris.cv.nrao.EDU"
From: SWAI@db1.cc.rochester.edu
To: abridle@polaris.cv.nrao.edu
Subject: Re: salary
Date: Thu, 14 May 1992 12:01 EDT

I just talked to Dan and he says that either you or Bob Brown need to
send a letter to him and Hugh explaining what is suspose to happen. Dan
says without something in writting, no official paper trail can be
established on this end. The addresses for Hugh and Dan are the same as
mine here. Just in case you need it again:

Dan M. Watson
Assistant Professor of Physics and Astronomy
Department of Physics and Astronomy
University of Rochester
Rochester, NY 14627-0011

Hugh Van Horn
Professor.....
same as for Dan

The last day I will check my email here is tomarrow.

From rbrown Fri May 15 08:34:58 1992
X-VM-v5-Data: ([nil nil nil nil nil nil t nil nil]
      ["308" "Fri" "15" "May" "92" "08:34:58" "-0400" "Robert Brown" "rbrown " nil
"5" "Re: M.Swain salary U.R. component" nil nil nil "5" nil nil (number " " mark "
Z Robert Brown   May 15   5/308   " thread-indent "\"Re: M.Swain salary U.R.
component\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA13291; Fri, 15 May 92 08:34:58 -0400
Message-Id: <9205151234.AA13291@polaris.cv.nrao.edu>
References: <9205141547.AA15648@polaris.cv.nrao.edu>
From: rbrown (Robert Brown)
To: abridle (Alan Bridle)
Subject: Re: M.Swain salary U.R. component
Date: Fri, 15 May 92 08:34:58 -0400

U.R. should pay him directly, ignoring the fact that we are also paying
him, and certainly should not hand us money that we pass along to Mark.
The idea of this rather token university committment is to remind the
university that they still have a financial as well as an academic attachment
to the student.

From abridle Wed Jun 3 14:35:31 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["560" "Wed" "3" "June" "92" "14:35:31" "-0400" "Alan Bridle" "abridle " nil
"15" "Office space" nil nil nil "6" nil nil (number " " mark "   Alan Bridle
Jun 3   15/560   " thread-indent "\"Office space\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA23444; Wed, 3 Jun 92 14:35:31 -0400
Message-Id: <9206031835.AA23444@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: rbrown
Subject: Office space
Date: Wed, 3 Jun 92 14:35:31 -0400

Mark Swain starts his 2 years at NRAO on July 1 (he is already here in C'ville but you may recall we told him not to start until July 1 so that we could assign him space and a SPARC station to be vacated by the aips++ group).

I have been trying to make arrangements with Bob Burns about which computer desk and SPARCs will be assigned to Mark, and when, to ensure that we do have something ready to go for him when he starts.

Question is :-- which **room** does he go into according the NRAO post-aips++, post VLBA correlator master room plan?

Thanks, A.

From abridle Thu Jul 16 18:47:45 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["895" "Thu" "16" "July" "92" "18:47:27" "-0400" "Alan Bridle" "abridle " nil
"19" "Experiments" nil nil nil "7" nil nil (number " " mark " Alan Bridle
Jul 16 19/895 " thread-indent "\"Experiments\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA37842; Thu, 16 Jul 92 18:47:27 -0400
Message-Id: <9207162247.AA37842@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: SWAI@db1.cc.rochester.edu
Subject: Experiments
Date: Thu, 16 Jul 92 18:47:27 -0400

I tried several after you went to dinner.

1. I was able to crossmount your data disk and lemur's from an aips
login on my own machine. So I copied the CLEANed A array image and
its .CC file across to lemur's disk under control of my machine, using
the AIPS SUBIM task. This got the 1000-points-of-light model onto
lemur's disk alongside the B array data.

2. I ran the CALIB of the B array data on the A array model, on lemur.
Also avoiding the network scratch disk. Much faster. But of course
the cpu is much faster, too.

3. I found out how to run a monitor of truchas' cpu performance on my
machine, so I could watch the CPU load of the MX from my machine.
There are long periods of about 60% cpu load followed by short bursts of
almost 100% and idle. Friday morning, let's try to get this going
in your window system so we can learn a bit more about the load factors.

Cheers, Alan

From abridle Sat Jul 18 15:37:03 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["655" "Sat" "18" "July" "92" "15:37:02" "-0400" "Alan Bridle" "abridle " nil
"19" "3C353 image" nil nil nil "7" nil nil (number " " mark " Alan Bridle
Jul 18 19/655 " thread-indent "\"3C353 image\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA14786; Sat, 18 Jul 92 15:37:02 -0400
Message-Id: <9207181937.AA14786@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: 3C353 image
Date: Sat, 18 Jul 92 15:37:02 -0400

I came in this pm and looked at the 3C353 A+B deconvolution. It's
in good shape and we are going to have a spectacular view of the
filaments once we also mix the C and D data in!

As sometimes happens with a combined-array dataset, the CLEAN
went negative well before the # of components in the previous A-only
deconvolution. So we need to keep going with CALIB on the
combined data. I set a CALIB going on truchas as this is where
we have both the uv data and the image+CC available. Should
be done some time this evening.

If it runs to completion o.k., you might try rerunning the MX.

Call me at home, 971-7752 if there are any problems.

Alan

From mswain Thu Oct 29 14:49:21 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["2352" "Thu" "29" "October" "92" "14:49:21" "-0500" "Mark Swain" "mswain "
nil "63" "VLA archive request" nil nil nil "10" nil nil (number " " mark " Mark
Swain Oct 29 63/2352 " thread-indent "\"VLA archive request\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA24193; Thu, 29 Oct 92 14:49:21 -0500
Message-Id: <9210291949.AA24193@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: VLA archive request
Date: Thu, 29 Oct 92 14:49:21 -0500

Alan,

Here is the message I sent to Sue requesting a copy of the
archive tape for the C band, D array data.

------- Start of forwarded message -------
X-VM-v5-Data: ([nil t nil nil nil nil nil nil nil]
["1637" "Wed" "28" "October" "92" "14:43:35" "-0500" "Mark Swain" "mswain "
nil "45" "Re: archive copies" nil nil nil "10"])
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
id AA39048; Wed, 28 Oct 92 14:43:35 -0500
Message-Id: <9210281943.AA39048@polaris.cv.nrao.edu>
References: <9210011551.AA12217@zia.aoc.nrao.edu>
From: mswain (Mark Swain)
To: Data Analysts <analysts@aoc.nrao.edu>
Subject: Re: archive copies
Date: Wed, 28 Oct 92 14:43:35 -0500

Sue,

During the course of my request for copies of the VLA archive
tapes for project codes AV112, AM270 and AB354, you sent me
an email message to the affect that the observation date I
requested for AV112 (28-SEP-84) was incorrect and that the
AV112 observations occurred on 29-JUL-84. I apologize for
not looking into this matter more carefully at the time.
Unfortunately, the AV112 data I was sent does not include
any observations of the source I am interested in (1717-009).
After some detective work on this end, it now appears that
I gave you the wrong project code.

Here is what happened. Alan Bridle, my thesis advisor, gave
me calibrated data (C band, D array for 1717-00) which
was originally observed by Wil Van Breugel on 28-SEP-84
between 22 48 and 23 18 IAT. Alan and I now wish to refer
to the uncalibrated data from the same observations.
Unfortunately, Alan no longer has the uncalibrated data.
For a variety of reasons, we mistakenly concluded that
the observations we were interested in were done under
project code AV112. We now have good reason to believe
the correct project code is AV91.

So, I need a copy of the VLA archive tape for the

following source and any calibrators associated with it.

```
source = 1717-00             <- This information we
observer = Van Breugel       <- know is correct from
observe date = 28-SEP-84     <- the calibrated data
IAT range = 22 48 to 23 18   <- we already have.

project code = AV91          <- information we believe
                                to be correct
```

My address is:
Mark Swain
NRAO
520 Edgemong Road
Charlottesville, VA 22903-2475

Thanks,
Mark
------- End of forwarded message -------

From mswain Thu Oct 29 14:44:14 1992
X-VM-v5-Data: ([nil nil nil nil nil nil t nil nil]
      ["9855" "Thu" "29" "October" "92" "14:44:14" "-0500" "Mark Swain" "mswain "
nil "210" "approved IPAC user/ADDSCAN request" nil nil nil "10" nil nil (number " "
mark " Z Mark Swain   Oct 29 210/9855 " thread-indent "\"approved IPAC
user/ADDSCAN request\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA24158; Thu, 29 Oct 92 14:44:14 -0500
Message-Id: <9210291944.AA24158@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: approved IPAC user/ADDSCAN request
Date: Thu, 29 Oct 92 14:44:14 -0500

Alan,

To submit an ADDSCAN request to IPAC, you must first become an
approved IPAC user. Ann Wehrle suggests that you write and email
letter addressed to the director (of IPAC?) Charles Beichman
explaining the project and requesting to become an approved IPAC
user. Ann also specified that the letter be sent to her address.

aew@ipac.caltech.edu

An ADDSCAN request needs to be submittet although wheather this
should be done concurrently with requesting to become an approved
user or not is not clear to me. I included the message/instructions
I got from the addscan-req account in this message and I filled out
the ADDSCAN request form so it should be ready to submit when ever
you feel is appropriate.

Mark

- ------- Start of forwarded message -------
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["8322" "Tue" "27" "October" "92" "08:25:03" "PST" "ADDSCAN-
REQ@ipac.caltech.edu" "ADDSCAN-REQ@ipac.caltech.edu" nil "174" "ADDSCAN Information
per your request" "^From:" nil nil "10"])
Received: from ipac.caltech.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA42241; Tue, 27 Oct 92 12:25:22 -0400
Return-Path: <ADDSCAN-REQ@ipac.caltech.edu>
Received: by castor.ipac.caltech.edu (4.1-ir.030292)
          id AA08801; Tue, 27 Oct 92 08:25:03 PST
Message-Id: <9210271625.AA08801@castor.ipac.caltech.edu>
Comments: This reply is computer generated
Version: Thu Apr 9 13:55:53 PDT 1992
Errors-To: postmaster@ipac.caltech.edu
From: ADDSCAN-REQ@ipac.caltech.edu
Apparently-To: mswain@polaris.cv.nrao.edu
Subject: ADDSCAN Information per your request
Date: Tue, 27 Oct 92 08:25:03 PST

Greetings:

****

****
IMPORTANT:

Please be aware that IPAC is in the process of transferring our operations
to a new computer envirornment. This may result in delays in producing
some IPAC data products. In particular, delays of up to a month or more
are anticipated for ADDSCAN, HIRES and FRESCO requests. Your request will
be entered into the queue and will be processed as soon as we are able.

We ask for your patience during this transition period. If you have any
questions, please contact one of the GI Support Staff listed below.

****
****

This message is a response to your inquiry on submitting a data request
via Electronic mail. Your request should be in the format of the
attached template; requests not in this format may be returned for
clarification. Because this format is periodically udated, you should
send mail to this account each time you make a request.

General Instructions:

The lines on the form that start with '\char' are keyword lines. You must
fill out the first five of these (name and address information) but the
others will default to the values shown. Lines that start with '\' are
comments. The data table header lines start with '|' and the columns are
delineated with the '|'. The data in the table must be underneath or
to the right of the '|' delineating the left side of the column, and to
the left of the '|' delinieating the right side of the column. The end
of the data table is indicated by '\ EOF'.

Coordinates may be specified in any of several coordinate systems. Epoch
1950 coordinates are assumed. The example shows equatorial sexigesimal
coordinates, denoted by CRA and CDEC in the header. The following formats
for sexigesimal input are all valid: 1h23m45.6s, 12345.6, 01 23 45.6. Other
coordinate systems are available: equatorial decimal (edit the header
to read RA and DEC) ecliptic (ELAT,ELON) or galactic (GLAT,GLON).

If you need modification of the processing not accomodated by the keywords
in the form, or you have other special instructions, please use the
SIC (Special Instruction) lines to state your request.

When you have completed the request form, mail it back to:
     INTERNET   addscan@IPAC.caltech.edu
If you do not have Internet access, you may try:
     NSI/Decnet   east::"addscan@IPAC.caltech.edu"
     BITNET   addscan%IPAC@hamlet

IMPORTANT: When your request has been recieved, you will be e-mailed
an acknowlegement. If you do NOT hear from us, your request may never have
reached IPAC. If this happens, please contact the IPAC librarian.

If you would like your results express mailed, please contact the IPAC
librarian
 with an account to charge.

If you do not have a copy of the IPAC User's guide and would like one,
or if you would like to be added to the IPAC mailing list please

contact the IPAC librarian. Other documentation you may find useful includes the IRAS Catalogs and Atlases Explanatory Supplement and the Faint Source Survey Explanatory Supplement.

Note that the people below may be e-mailed in any of the address formats detailed above for returning your data request. Simply replace ADDSCAN with username. For general questions about IPAC send mail to username "info". For questions about your usage of the IRAS data please contact the GI Support staff.

Name (username)			
Rosanne Scholey	(library)	Library & Facilities Supervisor	(818)584-2960
Deborah Levine	(deblev)	GI Support Specialist	(818)584-2913
Ann Wehrle	(aew)	GI Support Scientist	(818)584-2923

****
About ADDSCAN:

If you are scheduled to come to IPAC to perform further analysis requiring that the ADDSCAN or SCANPI output files be on-line during you visit, please specify this in the SIC area.

ADDSCAN tape output defaults to 6250bpi density, ANSI-standard unlabelled format with a logical record length of 132 bytes and a block size of 19008 bytes. All individual disk files are written separately to tape. If you wish any variation to this, please specify your constraints in the SIC fields or call us.

More information about ADDSCAN/SCANPI is available in the IPAC User's Guide (Dec 1989 version).

- - ---------- request form starts below this line ----------

```
\
\                   ADDSCAN Processing Request
\                   ==========================
\
\  User Information
\  ----------------
\char PI      = "Funded One   "                    !  (20 characters max.)
\char NAME    = "Alan Bridle  "                    !  (if other than PI)
\char INST    = "NRAO"
\char ADDRESS = "NRAO, 520 Edgemont Rd. Charlottesville, VA 22903-2475"
\char PHONE   = "804-296-0375"
\
\                               Note:   The PI should be the name of the
\                               ====    Principal Investigator.  The PI must
\                                       either have and ADP grant ormust be an
\                                       approved user.  If the PI is the one
\                                       making the data request, NAME may be
\                                       left blank.
\                                       The institution, mailing and phone
\                                       data are required.
\
\char USERID  = "        "   ! IPAC USE ONLY
\char NEED_BY = "1/1/93"
\
\char MAIL = yes            The output will be mailed to you rather than
```

```
\                           waiting at IPAC for you to come and get it
\                           (mailed output is deleted at IPAC unless
\                           otherwise specified in the SIC fields).
\                           Set MAIL = ftp if you wish to pick up your
\                           data from our anonymous ftp account.  However,
\                           plots cannot be optained this way, only data
\                           that would have been written to tape.
\
\  DEFAULT PROCESSING:      Run ADDSCAN and SCANPI
\  ------------------       (SCANPI run on coadded data only).
\                           Print SCANPI summary tables on paper only.
\                           Generate SCANPI plots.
\
\  Modified Processing
\  -------------------
\char SCANPI  = yes        ! Change to 'no' if you don't want SCANPI run.
\char ADDPLT  = no         ! Use ADDPLT to plot raw data for each scan
\                          ! and to plot coadded raw data.
\char NOPT    = no         ! SCANPI processing done on each detector pass.
\
\
\  Output
\  ------
\int  DENSITY = 6250       ! Output tape density (1600 / 6250 bpi)
\char ADDTBL  = no         ! Write raw scan data to tape in ASCII format.
\char MEDOUT  = no         ! Write SCANPI median scan profiles to tape.
\char SPIPLT  = yes        ! Generate SCANPI paper plots.
\char SUMOUT  = paper      ! Output disposition of SCANPI summary tables
\                          ! (paper/tape/both).
\
\
\  Special Instructions      (free format text, three lines max.)
\  --------------------
\           ------------------------------------------------------------------
\char SIC1 = "                                                                 "
\char SIC2 = "                                                                 "
\char SIC3 = "                                                                 "
\           ------------------------------------------------------------------
\
\
\  Source Table   Coordinates are equatorial (sexigesimal (CRA,CDEC) or
\  ------------   decimal degrees (RA,DEC)), galactic (GLON,GLAT), or
\                 ecliptic (ELON,ELAT). Source name is 16 characters or less.
\
\ ----------------------------------------
|    Source     |     RA      |     DEC     |
|     char      |     char     |     char     |
|               |              |              |
     S0001         17 17 53.3     -00 55 49.5
\ EOF
- ------- End of forwarded message -------
```

From abridle Mon Nov 2 10:37:46 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1385" "Mon" "2" "November" "92" "10:37:46" "-0500" "Alan Bridle" "abridle "
nil "37" "Draft of letter" nil nil nil "11" nil nil (number " " mark "   Alan
Bridle   Nov 2   37/1385 " thread-indent "\"Draft of letter\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA21538; Mon, 2 Nov 92 10:37:46 -0500
Message-Id: <9211021537.AA21538@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Draft of letter
Date: Mon, 2 Nov 92 10:37:46 -0500

Dr. C. Beichman,
Director, IPAC,
California Institute of Technology.

Dear Dr. Beichman,

I wish to become an approved IPAC user in order that Mark Swain, a
student doing a Ph.D. thesis under my supervision, may have access to
the ADDSCAN/SCANPI data for the radio galaxy 3C353.

The ADDSCAN/SCANPI data for 3C353 are needed to set limits to the
infrared luminosity of the galaxy, for comparison with published IR
data for other powerful radio sources.

3C353 (1717-009) is a powerful, extended double-lobed radio source
centered on a giant elliptical galaxy in a cluster at z=0.0304.
Despite being the fourth brightest radio galaxy in the 3CR, the source
has long been understudied at radio wavelengths because of its low
declination. Mark Swain and I have observed the source with the VLA,
and have found that it contains many interesting radio features,
including well-resolved jets and hot spots, and a rich network of
large-scale filaments throughout both radio lobes. We are now
producing sensitive, high quality VLA images of 3C353 for an intensive
multi-frequency study of its spectral and polarimetric properties.

Our ADDSCAN/SCANPI request is being sent by separate E-mail to Ann
Wehrle.

Thank you for your consideration in this matter.

Alan H. Bridle

Scientist (Basic Research)
National Radio Astronomy Observatory
520 Edgemont Road, Charlottesville,
VA 22903-2475

From abridle Mon Nov 2 10:40:24 1992
X-VM-v5-Data: ([nil nil nil nil nil nil t nil nil]
      ["3574" "Mon" "2" "November" "92" "10:40:24" "-0500" "Alan Bridle" "abridle "
nil "81" "Draft of request" nil nil nil "11" nil nil (number " " mark " Z Alan
Bridle   Nov 2   81/3574 " thread-indent "\"Draft of request\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)

```
          id AA24121; Mon, 2 Nov 92 10:40:24 -0500
Message-Id: <9211021540.AA24121@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Draft of request
Date: Mon, 2 Nov 92 10:40:24 -0500


\
\                   ADDSCAN Processing Request
\                   ==========================
\
\  User Information
\  ----------------
\char PI      = "Alan H. Bridle"                     !  (20 characters max.)
\char NAME    = "  "                      !  (if other than PI)
\char INST    = "NRAO"
\char ADDRESS = "NRAO, 520 Edgemont Rd. Charlottesville, VA 22903-2475"
\char PHONE   = "804-296-0375"
\
\                                Note:   The PI should be the name of the
\                                ====    Principal Investigator.  The PI must
\                                        either have and ADP grant ormust be an
\                                        approved user.  If the PI is the one
\                                        making the data request, NAME may be
\                                        left blank.
\                                        The institution, mailing and phone
\                                        data are required.
\
\char USERID  = "        "   ! IPAC USE ONLY
\char NEED_BY = "1/1/93"
\
\char MAIL = yes             The output will be mailed to you rather than
\                            waiting at IPAC for you to come and get it
\                            (mailed output is deleted at IPAC unless
\                            otherwise specified in the SIC fields).
\                            Set MAIL = ftp if you wish to pick up your
\                            data from our anonymous ftp account.  However,
\                            plots cannot be optained this way, only data
\                            that would have been written to tape.
\
\  DEFAULT PROCESSING:       Run ADDSCAN and SCANPI
\  ------------------        (SCANPI run on coadded data only).
\                            Print SCANPI summary tables on paper only.
\                            Generate SCANPI plots.
\
\  Modified Processing
\  -------------------
\char SCANPI  = yes        ! Change to 'no' if you don't want SCANPI run.
\char ADDPLT  = no         ! Use ADDPLT to
 plot raw data for each scan
\                          ! and to plot coadded raw data.
\char NOPT    = no         ! SCANPI processing done on each detector pass.
\
\
\  Output
\  ------
\int  DENSITY = 6250       ! Output tape density (1600 / 6250 bpi)
\char ADDTBL  = no         ! Write raw scan data to tape in ASCII format.
```

```
\char MEDOUT  = no         ! Write SCANPI median scan profiles to tape.
\char SPIPLT  = yes        ! Generate SCANPI paper plots.
\char SUMOUT  = paper      ! Output disposition of SCANPI summary tables
\                          ! (paper/tape/both).
\
\
\  Special Instructions      (free format text, three lines max.)
\  --------------------
\            ------------------------------------------------------------------
\char SIC1 = "                                                                  "
\char SIC2 = "                                                                  "
\char SIC3 = "                                                                  "
\            ------------------------------------------------------------------
\
\
\  Source Table   Coordinates are equatorial (sexigesimal (CRA,CDEC) or
\  ------------   decimal degrees (RA,DEC)), galactic (GLON,GLAT), or
\                 ecliptic (ELON,ELAT). Source name is 16 characters or less.
\
\ ------------------------------------------
|    Source     |     RA      |     DEC     |
|     char      |     char     |     char     |
|               |              |              |
     S0001         17 17 53.3     -00 55 49.5
\ EOF
```

From root Mon Nov 2 16:48:24 1992
X-VM-v5-Data: ([nil nil nil nil t nil t nil nil]
      ["429" "Mon" "2" "November" "92" "13:48:20" "PST" "aew@ipac.caltech.edu"
"aew@ipac.caltech.edu" "<9211022148.AA05869@mason.ipac.caltech.edu>" "10" "Re: 2
mails coming" nil nil nil "11" nil nil (number " " mark " R aew@ipac.caltech. Nov
2   10/429   " thread-indent "\"Re: 2 mails coming\"\n") nil]
      nil)
Received: from ipac.caltech.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA24254; Mon, 2 Nov 92 16:48:23 -0500
Return-Path: <aew@ipac.caltech.edu>
Received: from mason.ipac.caltech.edu
          by castor.ipac.caltech.edu (5.65-ir.030292)
          id AA02013; Mon, 2 Nov 92 13:48:22 -0800
Received: by mason.ipac.caltech.edu (c.090991)
Message-Id: <9211022148.AA05869@mason.ipac.caltech.edu>
From: aew@ipac.caltech.edu
To: abridle@polaris.cv.nrao.edu
Subject: Re: 2 mails coming
Date: Mon, 2 Nov 92 13:48:20 PST

Congratulations, you are now an approved user (userid ipacd44). Probably
the easiest proposal you ever wrote? It will take a couple of weeks or so
for you to received the output in the mail.

I have crunched several nice bright nearby radio galaxies through the HIRES
process to improve resolution with IRAS. None were resolved in any useful
manner. If your object is brightere than 1 Jy, we can give it a try.

cheers,
Ann

From abridle Mon Nov 2 12:59:28 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1386" "Mon" "2" "November" "92" "12:59:25" "-0500" "Alan Bridle" "abridle "
nil "38" "Letter to C. Beichman" nil nil nil "11" nil nil (number " " mark "
Alan Bridle   Nov 2   38/1386 " thread-indent "\"Letter to C. Beichman\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA20496; Mon, 2 Nov 92 12:59:25 -0500
Message-Id: <9211021759.AA20496@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: aew@ipac.caltech.edu
Subject: Letter to C. Beichman
Date: Mon, 2 Nov 92 12:59:25 -0500

Dr. C. Beichman,
Director, IPAC,
California Institute of Technology.

Dear Dr. Beichman,

I wish to become an approved IPAC user in order that Mark Swain, a
student doing a Ph.D. thesis under my supervision, may have access to
the ADDSCAN/SCANPI data for the radio galaxy 3C353.

The ADDSCAN/SCANPI data for 3C353 are needed to set limits to the
infrared luminosity of the galaxy, for comparison with published IR

data for other powerful radio sources.

3C353 (1717-009) is a powerful, extended double-lobed radio source centered on a giant elliptical galaxy in a cluster at z=0.0304. Despite being the fourth brightest radio galaxy in the 3CR, the source has long been understudied at radio wavelengths because of its low declination. Mark Swain and I have observed the source with the VLA, and have found that it contains many interesting radio features, including well-resolved jets and hot spots, and a rich network of large-scale filaments throughout both radio lobes. We are now producing sensitive, high quality VLA images of 3C353 for an intensive multi-frequency study of its spectral and polarimetric properties.

Our ADDSCAN/SCANPI request is being sent by separate E-mail to Ann Wehrle.

Thank you for your consideration in this matter.

Alan H. Bridle

Scientist (Basic Research)
National Radio Astronomy Observatory
520 Edgemont Road, Charlottesville,
VA 22903-2475

```
From abridle Mon Nov  2 13:04:28 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["3571" "Mon" "2" "November" "92" "13:04:23" "-0500" "Alan Bridle" "abridle "
nil "78" "ADDSCAN request" nil nil nil "11" nil nil (number " " mark "     Alan
Bridle       Nov  2   78/3571  " thread-indent "\"ADDSCAN request\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA18480; Mon, 2 Nov 92 13:04:23 -0500
Message-Id: <9211021804.AA18480@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: aew@ipac.caltech.edu
Subject: ADDSCAN request
Date: Mon, 2 Nov 92 13:04:23 -0500


\
\                   ADDSCAN Processing Request
\                   ==========================
\
\  User Information
\  ----------------
\char PI      = "Alan H. Bridle"                     !  (20 characters max.)
\char NAME    = "  "                      !  (if other than PI)
\char INST    = "NRAO"
\char ADDRESS = "NRAO, 520 Edgemont Rd. Charlottesville, VA 22903-2475"
\char PHONE   = "804-296-0375"
\
\                               Note:   The PI should be the name of the
\                               ====    Principal Investigator.  The PI must
\                                       either have and ADP grant ormust be an
\                                       approved user.  If the PI is the one
\                                       making the data request, NAME may be
\                                       left blank.
\                                       The institution, mailing and phone
\                                       data are required.
\
\char USERID  = "        "   ! IPAC USE ONLY
\char NEED_BY = "1/1/93"
\
\char MAIL = yes            The output will be mailed to you rather than
\                           waiting at IPAC for you to come and get it
\                           (mailed output is deleted at IPAC unless
\                           otherwise specified in the SIC fields).
\                           Set MAIL = ftp if you wish to pick up your
\                           data from our anonymous ftp account.  However,
\                           plots cannot be optained this way, only data
\                           that would have been written to tape.
\
\  DEFAULT PROCESSING:      Run ADDSCAN and SCANPI
\  ------------------       (SCANPI run on coadded data only).
\                           Print SCANPI summary tables on paper only.
\                           Generate SCANPI plots.
\
\  Modified Processing
\  -------------------
\char SCANPI  = yes        ! Change to 'no' if you don't want SCANPI run.
\char ADDPLT  = no         ! Use ADDPLT to plot raw data for each scan
\                          ! and to plot coadded raw data.
\char NOPT    = no         ! SCANPI processing done on each detector pass.
```

```
\
\
\  Output
\  ------
\int  DENSITY = 6250       ! Output tape density (1600 / 6250 bpi)
\char ADDTBL  = no         ! Write raw scan data to tape in ASCII format.
\char MEDOUT  = no         ! Write SCANPI median scan profiles to tape.
\char SPIPLT  = yes        ! Generate SCANPI paper plots.
\char SUMOUT  = paper      ! Output disposition of SCANPI summary tables
\                          ! (paper/tape/both).
\
\
\  Special Instructions      (free format text, three lines max.)
\  --------------------
\            ------------------------------------------------------------------
\char SIC1 = "                                                                  "
\char SIC2 = "                                                                  "
\char SIC3 = "                                                                  "
\            ------------------------------------------------------------------
\
\
\  Source Table   Coordinates are equatorial (sexigesimal (CRA,CDEC) or
\  ------------   decimal degrees (RA,DEC)), galactic (GLON,GLAT), or
\                 ecliptic (ELON,ELAT). Source name is 16 characters or less.
\
\ ------------------------------------------
|    Source     |     RA      |     DEC     |
|     char      |     char     |     char     |
|               |              |              |
     S0001         17 17 53.3     -00 55 49.5
\ EOF
```

From mswain Fri Nov 6 15:25:49 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["930" "Fri" "6" "November" "92" "15:25:49" "-0500" "Mark Swain" "mswain "
nil "20" "Re: qualifying exam" nil nil nil "11" nil nil (number " " mark "   Mark
Swain   Nov 6   20/930   " thread-indent "\"Re: qualifying exam\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA18643; Fri, 6 Nov 92 15:25:49 -0500
Message-Id: <9211062025.AA18643@polaris.cv.nrao.edu>
References: <9207102033.AA35121@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: HMVH%UORDB2.bitnet@CUNYVM.CUNY.EDU, abridle
Subject: Re: qualifying exam
Date: Fri, 6 Nov 92 15:25:49 -0500

Dear Hugh,
   Alan and I feel that I should not attempt to take the qual
this semester. My intent, considered rather optimistic by Alan,
was to squeeze the qual in during the second week of December.
That is no longer possible. Alan just heard that a visiting student
who was suppose to arrive next week will instead be arriving
around Thanksgiving. Neither of us think doing the qual before
Thanksgiving is possible and Alan will be busy with his visitor
until early '93. Alan also has a strong preference for not
traveling to Rochester in January or February because be would
rather not risk driving in heavy snow; flying is not an option
for him. Postponing the qual until spring also gives me a chance
to make a much better proposal for thesis. I apologize for the
delay since I know you and Dan are anxious for me to pass the
qual as soon as possible.

Thoughts, concerns or screems of indignation?

Regards,
Mark

From mswain Sun Nov 8 13:41:18 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1640" "Sun" "8" "November" "92" "13:41:12" "-0500" "Mark Swain" "mswain "
nil "30" "Re: 3c353" nil nil nil "11" nil nil (number " " mark "   Mark Swain
Nov 8   30/1640 " thread-indent "\"Re: 3c353\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA08057; Sun, 8 Nov 92 13:41:12 -0500
Message-Id: <9211081841.AA08057@polaris.cv.nrao.edu>
References: <9210301623.AA05125@mason.ipac.caltech.edu>
From: mswain (Mark Swain)
To: aew@ipac.caltech.edu, abridle
Subject: Re: 3c353
Date: Sun, 8 Nov 92 13:41:12 -0500

Dear Ann,

Thank you for helping Alan and I with the ADDSCAN request and with getting the results so quiclky. After looking at the ADDSCAN results, it appears that there may have been detections at about the one Jansky level in the 60 and 100 micron band. To be more confident of the detections, I have some follow up questions.

The results of the 60 micron ADDSCAN differ dramatically (a factor of 20) depending on which coadding method was used. In this case, I wuld like to look at the calibrated data for each individual scan and select by hand which scans should be coadded. Could I get the calibrated data for individual scans by setting the "char ADDPLT" option to "yes" in the ADDSCAN request form and resubmitting our request? The "char ADDPLT" option makes reference to "raw data". Does "raw data" mean uncalibrated individual scan data?

The 100 micron results show a large, broad peak with another peak sitting on top. The peak on top is suspose to be the flux density of 3c353. I would like longer scans to get longer baselines for the fitting algorithm to work with so it can determine wheather there are in fact two peaks or just one. Doubling the scan length should do it.

The best way for Alan and I to read individual scan data is from a public access ftp account. I assume there is a way we can do that but I'm unclear about where to specify it in the ADDSCAN request form; would that be a special instruction? I also would appreciate a reminder about what document to read for specific information about how the ADDSCAN and SCANPI algorithms work.

Thanks again for your help and best regards.
Mark

From mswain Thu Nov 12 15:26:31 1992
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["2168" "Thu" "12" "November" "92" "15:26:31" "-0500" "Mark Swain" "mswain "
"<9211122026.AA21795@polaris.cv.nrao.edu>" "49" "forwarded message from
aew@ipac.caltech.edu" nil nil nil "11" nil nil (number " " mark " R Mark Swain
Nov 12   49/2168 " thread-indent "\"forwarded message from aew@ipac.caltech.edu\"\
n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA21795; Thu, 12 Nov 92 15:26:31 -0500
Message-Id: <9211122026.AA21795@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: forwarded message from aew@ipac.caltech.edu
Date: Thu, 12 Nov 92 15:26:31 -0500

At Ann's request, I sent her a fax of our ADDSCAN and SCANPI results.
Here is her response.

------- Start of forwarded message -------
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1001" "Thu" "12" "November" "92" "12:20:24" "PST" "aew@ipac.caltech.edu"
"aew@ipac.caltech.edu" nil "16" "3c353" "^From:" nil nil "11"])
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA18908; Thu, 12 Nov 92 15:20:27 -0500
Received: from ipac.caltech.edu by cv3.cv.nrao.edu (4.1/DDN-DLB/1.13)
      id AA00773; Thu, 12 Nov 92 15:20:30 EST
Return-Path: <aew@ipac.caltech.edu>
Received: from mason.ipac.caltech.edu
          by castor.ipac.caltech.edu (5.65-ir.030292)
          id AA08092; Thu, 12 Nov 92 12:20:26 -0800
Received: by mason.ipac.caltech.edu (c.090991)
Message-Id: <9211122020.AA08679@mason.ipac.caltech.edu>
From: aew@ipac.caltech.edu
To: mswain@NRAO.EDU
Subject: 3c353
Date: Thu, 12 Nov 92 12:20:24 PST

Okay, I looked at the ISSA plates for your region. This particular plate is
not yet released to the public. What you have at 60 microns is the detection
of a source which is about 3 arcminutes away from 3c353. In one scan or so,
SCANPI is apparently catching enought of the flux from it to confuse the
detection, hence, when "discrepant scans" are thrown out for the median
filter detection (scan 1002), the big peak visible in the other plots
disappears and you are left with a little peak. Unfortunately, this little
peak is probably not your galaxy since the region of the sky is filled with
filamentary and diffuse cirrus (both). Looking aht the 100 micron image
makes it pretty clear that this is a nasty region of the sky for extragalactic
work. Probably the guys who work on cirrus love it. The 100 micron peak
is definitely cirrus.

I can try to make a grayscale version of the image for you at 60 and 100 microns
and put it in the mail for you, or you can fpt the postscript file.
Ann
------- End of forwarded message -------

Is there any reason why we need the grayscale version of the 60 and 100 micron immages? It sounds like would just be an immage of things we are not interested in.

Mark

From abridle Thu Nov 12 16:55:51 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["149" "Thu" "12" "November" "92" "16:55:51" "-0500" "Alan Bridle" "abridle "
nil "3" "Re: forwarded message from aew@ipac.caltech.edu" nil nil nil "11" nil nil
(number " " mark "   Alan Bridle   Nov 12   3/149   " thread-indent "\"Re:
forwarded message from aew@ipac.caltech.edu\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA21339; Thu, 12 Nov 92 16:55:51 -0500
Message-Id: <9211122155.AA21339@polaris.cv.nrao.edu>
References: <9211122026.AA21795@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: forwarded message from aew@ipac.caltech.edu
Date: Thu, 12 Nov 92 16:55:51 -0500

These images might be of interest in circumscribing future IR
follow-ups. If they're going to be made anyway, we might as well
have copies of them.

From abridle Tue Dec 1 16:47:34 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["339" "Tue" "1" "December" "92" "16:47:34" "-0500" "Alan Bridle" "abridle "
nil "15" "aips login on rhesus" nil nil nil "12" nil nil (number " " mark "
Alan Bridle   Dec 1   15/339   " thread-indent "\"aips login on rhesus\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA16885; Tue, 1 Dec 92 16:47:34 -0500
Message-Id: <9212012147.AA16885@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: aips login on rhesus
Date: Tue, 1 Dec 92 16:47:34 -0500

We have fixed the .login script on rhesus so that aips can again
be started up from the aips login.

So if you use rlogin rhesus -l aips

and respond with the aips password

you will now be able to start aips with, e.g. aips pr=7 tv=truchas

If everyone using aips would log in as aips, this will reduce the
file-locking problem.

A.

From abridle Mon Dec 7 14:45:27 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1989" "Mon" "7" "December" "92" "14:45:26" "-0500" "Alan Bridle" "abridle "
nil "49" "\"Stalled\" selfcals" nil nil nil "12" nil nil (number " " mark "
Alan Bridle   Dec 7   49/1989 " thread-indent "\"\"Stalled\" selfcals\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA08311; Mon, 7 Dec 92 14:45:26 -0500
Message-Id: <9212071945.AA08311@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: "Stalled" selfcals
Date: Mon, 7 Dec 92 14:45:26 -0500

I've been working today on a data reduction that illustrates the point about self-cal not reall being "stalled" at the first failure to add more CLEAN cpts before the first negative.

Here are the no. of cpts before first -ve, and total CLEANed for a series I did today (each line is a further iteration of selfcal:)

no. cpts	total CLEANed flux density (Jy)
202	0.84
489	0.92
458	0.92
500	0.93
525	0.93
528	0.93
578	0.94
623	0.94
657	0.95
697	0.95
732	0.96

This is a B array dataset on a source with a very strong hot spot and about 450,000 vis records. The sidelobes of the bright hot spot limit the dynamic range and are gradually improving throughout this sequence, despite the stop-and-go behavior of the no. of components before the 1st -ve early on.

This just shows that the search for a better model is not always monotonic in the number of CLEANed cpts before first -ve. It has been more or less monotonic in the before-first- negative CLEANed flux density however. The total flux density of the source is about 1.10 Jy.

If this has been a "big" self-cal job it might have been tempting to call it "stalled" when the number of CLEAN components before first negative
 first decreased, or again when it only went from 525 to 528.
This would not have been correct, though.

I *am* in a regime here where the amplutide and phase corrections are becomeing very small (typically less than o.2% in amplitude and 0.5 degrees of phase) and long-term, so I have been increasing the integration time to get more accurate solutions as the self

calibration progresses.

Moral may be that you need to hit your head against the brick wall at least twice before you can be sure the wall is there!

A.

From abridle Tue Dec 8 12:06:49 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1081" "Tue" "8" "December" "92" "12:06:48" "-0500" "Alan Bridle" "abridle "
nil "28" "forwarded message from SBAUM@stsci.edu" nil nil nil "12" nil nil (number
" " mark "   Alan Bridle   Dec 8   28/1081 " thread-indent "\"forwarded
message from SBAUM@stsci.edu\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA35442; Tue, 8 Dec 92 12:06:48 -0500
Message-Id: <9212081706.AA35442@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: forwarded message from SBAUM@stsci.edu
Date: Tue, 8 Dec 92 12:06:48 -0500

------- Start of forwarded message -------
Received: from airy.stsci.edu by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA04597; Tue, 8 Dec 92 09:02:02 -0500
Received: from avion.stsci.edu by avion.stsci.edu (PMDF #3144) id
 <01GS2FU6THJK8WXP0I@avion.stsci.edu>; Tue, 8 Dec 1992 09:01:31 EDT
Message-Id: <01GS2FU6TR6Q8WXP0I@avion.stsci.edu>
X-Vms-To: BRIDLE
Mime-Version: 1.0
Content-Transfer-Encoding: 7BIT
From: SBAUM@stsci.edu
To: abridle@polaris.cv.nrao.edu
Subject: visit to STScI
Date: 08 Dec 1992 09:01:31 -0400 (EDT)

Hi Alan,

Mark's visits to STScI have been approved and I have 1450.00 to spend
on them (with actual expenses not to exceed 90.00 per day). So we
should try to set up a time for his visits. I think for me the earliest
it would be sensible for him to come would be after the first week in
February (I am away in Holland until Jan 17, and then functional
responsibilities having to do with the HST archive will consume me until
the first week in February...).

How does this sound to you/him?

Stefi
------- End of forwarded message -------

From mswain Tue Dec 8 12:40:47 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["516" "Tue" "8" "December" "92" "12:40:47" "-0500" "Mark Swain" "mswain "
nil "11" "Re: forwarded message from SBAUM@stsci.edu" nil nil nil "12" nil nil
(number " " mark "   Mark Swain   Dec 8   11/516   " thread-indent "\"Re:
forwarded message from SBAUM@stsci.edu\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA27352; Tue, 8 Dec 92 12:40:47 -0500
Message-Id: <9212081740.AA27352@polaris.cv.nrao.edu>
References: <9212081706.AA35442@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: forwarded message from SBAUM@stsci.edu
Date: Tue, 8 Dec 92 12:40:47 -0500

Alan,
   Going to STScI after the first week in Feb. if fine with me.
It might be a good idea to do STScI right at the first of Feb.
and get it done with to eleminate potential schedual conflicts.
The VLA will start B configuration observations Feb 12; I am all
for finished the STScI stent by that point. Also, when I meet
with Hugh and Dan next week, I need to have some idea when we
think I might want to take the quall. Does April sound reasonable
to you? Naturally, B configuration lasts until Apr 26.

Mark

From mswain Tue Dec 8 12:47:07 1992
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["305" "Tue" "8" "December" "92" "12:47:06" "-0500" "Mark Swain" "mswain "
nil "5" "Re:" nil nil nil "12" nil nil (number " " mark "   Mark Swain   Dec
8   5/305   " thread-indent "\"Re:\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.1/UCB 5.61/1.0)
          id AA27155; Tue, 8 Dec 92 12:47:06 -0500
Message-Id: <9212081747.AA27155@polaris.cv.nrao.edu>
References: <9212081706.AA35442@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re:
Date: Tue, 8 Dec 92 12:47:06 -0500

I found out more about the quall letter. It was sent out by
the graduate advisor to almost all graduate students - Dan and Hugh
had nothing to do with generating it. Apparently quite a few
people were put out of sorts by the letter. Dust still setteling
and relevance of letter (if any) quite unclear.

From mswain Mon Jan 4 10:29:54 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["334" "Mon" "4" "January" "1993" "10:29:54" "-0500" "Mark Swain" "mswain "
"<9301041529.AA25653@polaris.cv.nrao.edu>" "9" "VLBA summer school" nil nil nil "1"
nil nil (number " " mark " R Mark Swain   Jan 4   9/334   " thread-indent
"\"VLBA summer school\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA25653; Mon, 4 Jan 1993 10:29:54 -0500
Message-Id: <9301041529.AA25653@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: VLBA summer school
Date: Mon, 4 Jan 1993 10:29:54 -0500

Alan,
  I have some questions regarding a form I have been sent by the
VLBA summer school folks. Questions like do I want meal tickets
and what air line will I fly on.
  After having my truchas disk make very strange noises during
power up, I am backing all my aips files. Nothing like a good
scare to make one a believer.

Mark

From abridle Mon Jan 4 10:34:45 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["521" "Mon" "4" "January" "1993" "10:34:44" "-0500" "Alan Bridle" "abridle "
nil "12" "Re: VLBA summer school" nil nil nil "1" nil nil (number " " mark "
Alan Bridle   Jan 4   12/521   " thread-indent "\"Re: VLBA summer school\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA27785; Mon, 4 Jan 1993 10:34:44 -0500
Message-Id: <9301041534.AA27785@polaris.cv.nrao.edu>
References: <9301041529.AA25653@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: VLBA summer school
Date: Mon, 4 Jan 1993 10:34:44 -0500

It's convenient to have lunch at NM Tech during these workshops,
as most people will do that for convenience and it's a good time
to discuss things and meet people. However, the meals are not
particularly good for the price and there are definitely better
options for dinner. I don't know about breakfast there as I've
usually been in an apartment or a motel during the meetings and
so have made my own arrangements.

As for travel, tell 'em when you know your plans! I'll probably
be going out and back by train.

A.

From mswain Mon Jan 4 10:51:03 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["37" "Mon" "4" "January" "1993" "10:51:02" "-0500" "Mark Swain" "mswain "
"<9301041551.AA27097@polaris.cv.nrao.edu>" "1" "Re: VLBA summer school" nil nil nil
"1" nil nil (number " " mark " R Mark Swain   Jan 4   1/37   " thread-
indent "\"Re: VLBA summer school\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA27097; Mon, 4 Jan 1993 10:51:02 -0500
Message-Id: <9301041551.AA27097@polaris.cv.nrao.edu>
References: <9301041529.AA25653@polaris.cv.nrao.edu>
      <9301041534.AA27785@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: VLBA summer school
Date: Mon, 4 Jan 1993 10:51:02 -0500

Is it best that I stay in the dorms?

From abridle Mon Jan 4 11:32:28 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["133" "Mon" "4" "January" "1993" "11:32:27" "-0500" "Alan Bridle" "abridle "
nil "2" "Re: VLBA summer school" nil nil nil "1" nil nil (number " " mark "
Alan Bridle   Jan 4   2/133   " thread-indent "\"Re: VLBA summer school\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA19515; Mon, 4 Jan 1993 11:32:27 -0500
Message-Id: <9301041632.AA19515@polaris.cv.nrao.edu>
References: <9301041529.AA25653@polaris.cv.nrao.edu>
      <9301041534.AA27785@polaris.cv.nrao.edu>
      <9301041551.AA27097@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: VLBA summer school
Date: Mon, 4 Jan 1993 11:32:27 -0500

It's cheapest, and most of the other students will stay there. I'm
not sure it's "best", some of the dorms at Tech are pretty tacky.

From mswain Mon Feb 1 16:07:57 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["388" "Mon" "1" "February" "1993" "16:07:57" "-0500" "Mark Swain" "mswain "
nil "10" "qual date/Rochester talk" nil nil nil "2" nil nil (number " " mark "
Mark Swain   Feb 1   10/388   " thread-indent "\"qual date/Rochester talk\"\
n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA15559; Mon, 1 Feb 1993 16:07:57 -0500
Message-Id: <9302012107.AA15559@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: qual date/Rochester talk
Date: Mon, 1 Feb 1993 16:07:57 -0500

Alan,

Jack Thomas is the Rochester faculty member in charge of scheduling
thier astronomy talks. He would like to schedule you to talk on April
26 (a Monday). I have told him that your schedule is still fluid because
of VLBA observing. None-the-less, Jack would at least like to know a
date by which you could confirm the talk date. I'll forward you his
latest email message.

Mark

From mswain Mon Feb 1 16:11:21 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1126" "Mon" "1" "February" "1993" "16:11:21" "-0500" "Mark Swain" "mswain "
nil "25" "forwarded message from \"John H. Thomas, University of Rochester\"" nil
nil nil "2" nil nil (number " " mark "   Mark Swain   Feb 1   25/1126 "
thread-indent "\"forwarded message from \"John H. Thomas, University of
Rochester\"\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA22786; Mon, 1 Feb 1993 16:11:21 -0500
Message-Id: <9302012111.AA22786@polaris.cv.nrao.edu>
From:
 mswain (Mark Swain)
To: abridle
Subject: forwarded message from "John H. Thomas, University of Rochester"
Date: Mon, 1 Feb 1993 16:11:21 -0500

------- Start of forwarded message -------
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["208" "" "01" "February" "1993" "15:43:19" "-0500" "\"John H. Thomas,
University of Rochester\"" "JHTH@db1.cc.rochester.edu" nil "6" "Re: Alan's Astro
talk" "^From:" nil nil "2"])
Received: from db1.cc.rochester.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA19863; Mon, 1 Feb 1993 15:42:39 -0500
Received: from DBV by DBV (PMDF #2909) id <01GU7NXYSJF49GVA2Q@DBV>; Mon,
 1 Feb 1993 15:43:19 EST
Message-Id: <01GU7NXYVHIQ9GVA2Q@DBV>
X-Envelope-To: mswain@polaris.cv.nrao.EDU
X-Vms-To: IN%"mswain@polaris.cv.nrao.EDU"
X-Vms-Cc: JHTH
Mime-Version: 1.0
Content-Transfer-Encoding: 7BIT
From: "John H. Thomas, University of Rochester" <JHTH@db1.cc.rochester.edu>
To: mswain@polaris.cv.nrao.edu
Subject: Re: Alan's Astro talk
Date: 01 Feb 1993 15:43:19 -0500 (EST)

Dear Mark,
      Monday, April 26 is a regular astronomy seminar day and it is open, so
I have pencilled Alan Bridle's talk in for that day. Please confirm it with him
and have him send me a title.
                                        Jack

------- End of forwarded message -------

From abridle Thu Feb 18 21:48:36 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["191" "Thu" "18" "February" "1993" "21:48:36" "-0500" "Alan Bridle" "abridle
" nil "4" "BCD CLEAN/VTESS" nil nil nil "2" nil nil (number " " mark " Alan
Bridle Feb 18 4/191 " thread-indent "\"BCD CLEAN/VTESS\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA35847; Thu, 18 Feb 1993 21:48:36 -0500
Message-Id: <9302190248.AA35847@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: BCD CLEAN/VTESS
Date: Thu, 18 Feb 1993 21:48:36 -0500

Nice image. As you say, looking a bit ragged around the core still,
I can see the remnant of the strong NS sidelobe still. May be worth
CLEANing the core down to about 1 mJy after all ...

From abridle Wed Apr 7 20:47:15 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["4582" "Wed" "7" "April" "1993" "20:47:14" "-0400" "Alan Bridle" "abridle "
nil "88" "Filament questions" nil nil nil "4" nil nil (number " " mark " Alan
Bridle Apr 7 88/4582 " thread-indent "\"Filament questions\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA17634; Wed, 7 Apr 1993 20:47:14 -0400
Message-Id: <9304080047.AA17634@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Filament questions
Date: Wed, 7 Apr 1993 20:47:14 -0400

Just to make a note of some of the topics that came out of the
various discussions while we here re analysis of filaments.
Not all of equal practicality re your thesis, but things we
should try to sort through at some point:

1. Sources with good imaging of filaments to throw into the
analysis: 3C353, Fornax A (get from Ed), Cygnus A (get from
Chris -- you are organizing this (?), important to do
before he gets into move-to-Leiden panic)

2. Q: is there evidence for/against filaments being a surface
rather than volume feature? Important because many
instabilities that theorists would like to drive filaments
could work best on the lobe boundaries rather than throughout
their volume. Need to ask whether filament brightness
distributions are more consistent with empty-shell or filled-
sphere models (e.g. by radially averaging filament brightness
around lobes after filtering out any "smooth" components?

3. Q: is there a common power spectrum of filament brightnesses
in all lobes? Dissect out filamented regions of lobes,
perhaps with median-filter replacement of hot spots and
jets, then look at (a) 2-d power spectra from inverse transforms,
correcting for edge effects, (b) 2-d structure functions
(sanity check - should give same answer), (c) 1-d power spectra
averaged across the elongation axis for "cylindrical" lobes in

which filaments look "combed" (3C353W, Cyg both) and (d) 1-d power spectra averaged radially in "round" lobes in which filaments look "tangled" - (3C353E, Fornax both).

4. If answer to (3) is "yes", and especially if 3(c) and 3(d) suggest that these lob/filament forms might really be the same thing seen at different orientations, then the "common" spectrum becomes a target for theorists. Jean E. thinks it will be far enough removed from "standard" spectra such as Kolmogorov or Kraichnan (MHD) to need much detailed modeling (way beyond scope of thesis!) but if existence of a "standard" spectrum would provoke theorists' interest!

5. Q: What do the surface brightness histograms of filamented lobes look like? (destroys spatial information but contains some constraints on emissivity distribution which could relate to distribution of field intensities as suggested in Jean's paper. Again, evidence for a common form will be interesting, much less to be done if they're all different.

6. Connections: do filaments originate at/near hot spots or jets? Do scales, brightness contrast, spectral curvature evolve with position relative to jets, hot spots? Is there any evidence for/against jets termination shocks/turbulence as the "trigger" for filament formation?

7. Consequences of filamentation for standard equipartition, energetics / pressure balance/ ageing sums in radio lobes. How wrong can parameters derived from "smooth lobe" assumptions be in presence of widespread filamentation?

8. Comparison of filament length scales and spectra with models of particular instabilities -- Jean will suggest a "short list" of things to try here, including some unpublished work on plasma instabilities. Only detailed comparison with growth rates so far has been M87 (something also in Chris' thesis re Cygnus?) but Fornax and 3C353 may suggest different regime. Problem here will be lack of X-ray data, but we can at least consider the two "basic" environments -- normal cluster and strong cooling flow -- as alternatives. In practice, the range of detectable environments at X-ray energies is not huge, and it may be a reasonable start to simply examine two "typical" cases.

I had another chat with Jean about what might be done by trying to model the synchrotron emissivity numerically based on codes that can handle turbulent MHD. There is a group at NRL that has a suitable code and Jean had discussed taking a crack at this with them some time ago. It got left on the back burner then because it was not clear what data they could compare results with. Jean feels that if there turn out to be any systematic patterns (common denominators re power spectra, etc.) in our 6 lobes (two for each of the 3 sources), this sort of study could be re-motivated. (Possible post-thesis followup here, but nothing on your pre-thesis time scale.)

Anyway, it all basically means that the directions that one might move in will depend on whether or not the answers to the observational questions contain common patterns. That we shall simply have to wait and see ...

Cheers, A.

From abridle Thu Apr 8 11:47:29 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["225" "Thu" "8" "April" "1993" "11:47:28" "-0400" "Alan Bridle" "abridle "
nil "7" "Filament Q. followup" nil nil nil "4" nil nil (number " " mark "   Alan
Bridle   Apr 8   7/225   " thread-indent "\"Filament Q. followup\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA31894; Thu, 8 Apr 1993 11:47:28 -0400
Message-Id: <9304081547.AA31894@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Filament Q. followup
Date: Thu, 8 Apr 1993 11:47:28 -0400

Just checking my mail, noticed I'd said "averaged radially"
in item 3(d) re filaments yesterday. I meant to say averaged
azimuthally. Sorry 'bout that, hope you didn't waste any time
wondering what I was getting at!

A.

From mswain Thu Apr 8 13:00:43 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["1199" "Thu" "8" "April" "1993" "13:00:42" "-0400" "Mark Swain" "mswain "
"<9304081700.AA24597@polaris.cv.nrao.edu>" "25" "Re: Filament Q. followup" nil nil
nil "4" nil nil (number " " mark " R Mark Swain   Apr 8   25/1199 "
thread-indent "\"Re: Filament Q. followup\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA24597; Thu, 8 Apr 1993 13:00:42 -0400
Message-Id: <9304081700.AA24597@polaris.cv.nrao.edu>
References: <9304081547.AA31894@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: Filament Q. followup
Date: Thu, 8 Apr 1993 13:00:42 -0400

Alan,

I've now read both the filaments message and the followup. In
the "round" lobes, I think you would probably want to average
both radialy and azimuthally (seperately ofcorse). Both averages
may be sensitive to what we define as the center lobe (that is, our
choice of orgin for the coordinate system in which to do the averaging).
One possible outcome would be that the 1-d power spectrums averaged both
radialy and azimuthally could be used to define a ratio for purposes of
comparing "round" lobes.

Thanks for the list of topics on filaments. We need the multi-configuration
C band images (I,Q,U) NOW.

Had a good talk with Hugh since he was out here for the Visitors meeting.
He is up to speed now on what I have been doing recently. In even
stronger language than Stefi, Hugh encouraged me (I think this means us)
to publish by the end of the summer. He thought one paper would be a
minium and more would be better. Some of the power spectrum analysis
of filaments might make a good skimming out topic since for a first cut,
it could be done only at C band and only with 353.
  There wouldn't be
any multifrequency/multisource comparison but that could come later.

Regards,
Mark

From abridle Thu Apr 8 15:09:13 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1445" "Thu" "8" "April" "1993" "15:09:12" "-0400" "Alan Bridle" "abridle "
nil "38" "Re: Filament Q. followup" nil nil nil "4" nil nil (number " " mark "
Alan Bridle   Apr 8   38/1445 " thread-indent "\"Re: Filament Q. followup\"\
n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA26460; Thu, 8 Apr 1993 15:09:12 -0400
Message-Id: <9304081909.AA26460@polaris.cv.nrao.edu>
References: <9304081547.AA31894@polaris.cv.nrao.edu>
      <9304081700.AA24597@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: Filament Q. followup
Date: Thu, 8 Apr 1993 15:09:12 -0400

Hmm, I simply mis-wrote when I said "radial". What would
you do with the radial averaging?

I disagree somewhat about the 353 power spectra being of
stand-alone interest. Central to the whole question is
whether there is a _common_ power-law spectrum in a range
of source powers and detailed morphologies. The only
case to compare with from the literature is the one in
Dean Hines' thesis (which I have now copied relevant parts of)
for M87. And we will need to look at results of using _same_
method on different sources -- Hines only touched the topic
very obliquely and did not do much about removing systematic
effects.

I think the potentially interesting stand-alone topics in
3C353 are:

1. The jet - limb-brightening and collimation properties
           - relationship to counterjet

2. The infamous dark spot -- connection to filaments and
                             "intrinsic to 3C353" conclusion
                          -- implausibility of non-intrinsic models
                          -- symmetry w.r.t. other lobe

I don't feel that we can do much service to science by splitting
one aspect of the filament analysis and treating it as a
stand-alone. To make much sense of the filamentation problem
we will need to bring in all of its aspects and this whould
wait until we have the multi-frequency analyses done, in my
opinion.

Let's get some _results_ first, then worry about what to publish
and when!

A.

From abridle Thu Apr 8 15:48:03 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1166" "Thu" "8" "April" "1993" "15:48:03" "-0400" "Alan Bridle" "abridle "
nil "24" "Cyg A" nil nil nil "4" nil nil (number " " mark "   Alan Bridle
Apr 8   24/1166 " thread-indent "\"Cyg A\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA16517; Thu, 8 Apr 1993 15:48:03 -0400
Message-Id: <9304081948.AA16517@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Cyg A
Date: Thu, 8 Apr 1993 15:48:03 -0400

I just had another talk with Chris Carilli re using the Cyg A data.
he will load the full-resolution 6cm I image and any others he can lay
hands on quickly to his workstation disk and will then E-mail you re
ftp'ing them. He wants to talk to Rick before doing the same with
their 3.6cm Cyg A data as these aren't fully "used" yet.

He leaves in August and is clearly going into pre-departure
"panic mode" already so best to nail down getting this data
a.s.a.p.!

He also mentioned that Wayne Christiansen's student who was
working on fractal analysis of lobes has finished his Ph.D.
and gave a dissertation presentation at the AAS meeting in
Phoenix. As he was given the Cyg A and 3C353 data to work
with we need to know what came out of that. Wayne had said
he would come up to C'ville last Fall to talk about it but
never could pin him down to a date (he's become dean of
Research or something like down there). I'll get back in touch
with him to find out more, see if we can get a copy of the
thesis, and maybe we should either go down to Chapel Hill
or again try to set up a time for Wayne to come to C'ville
so we can get together about that he's done.

A.

From abridle Thu Apr 8 15:57:34 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["536" "Thu" "8" "April" "1993" "15:57:32" "-0400" "Alan Bridle" "abridle "
nil "14" "Lobe analysis" nil nil nil "4" nil nil (number " " mark "   Alan Bridle
Apr 8   14/536   " thread-indent "\"Lobe analysis\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA28348; Thu, 8 Apr 1993 15:57:32 -0400
Message-Id: <9304081957.AA28348@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: waco@unc.bitnet
Subject: Lobe analysis
Date: Thu, 8 Apr 1993 15:57:32 -0400

Hello again Wayne,

I was just talking to Chris Carilli at the AOC and he mentioned to
me that your student who was working on fractal analysis of lobes
had written up his thesis. I have a student who is just starting
to work on various aspects of the filamentation in Fornax A,
3C353 and Cygnus, so I'd be very interested first to have a
copy of the thesis to look at if possible and then to see if we
might get together some time over the summer to talk about lobe
physics and what this might all mean.

With best wishes,

Alan B.

From mswain Thu Apr 8 17:12:40 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["786" "Thu" "8" "April" "1993" "17:12:40" "-0400" "Mark Swain" "mswain " nil
"15" "Re: Filament Q. followup" nil nil nil "4" nil nil (number " " mark "   Mark
Swain   Apr 8   15/786   " thread-indent "\"Re: Filament Q. followup\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA30195; Thu, 8 Apr 1993 17:12:40 -0400
Message-Id: <9304082112.AA30195@polaris.cv.nrao.edu>
References: <9304081547.AA31894@polaris.cv.nrao.edu>
      <9304081700.AA24597@polaris.cv.nrao.edu>
      <9304081909.AA26460@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: Filament Q. followup
Date: Thu, 8 Apr 1993 17:12:40 -0400

I agree that we need results before we worry about publishing. I
just wanted to make the point that Hugh was reitterating Stefi's
comment about publishing something "quick and dirty" and that
I thought a stand alone analysis of the 353 filaments might be one
choice for that. Maybe it's not the best choice. One interesting
question will be what fraction of the lobe power is in filaments.
That is interesting to know for 353 all by it's self; it's even
more interesting to know for several sources.

As soon as Chris gives me the "ok", I will start ftp'ing all
the Cyg A data he and Rick will let me have.

I fear that treating the dark spot properly will require
a multi frequency data set; wheather that lends it's self
to the "quick and dirty" analysis is therefor unclear.

From abridle Thu Apr 8 18:04:03 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["404" "Thu" "8" "April" "1993" "18:04:02" "-0400" "Alan Bridle" "abridle "
nil "11" "Spectral analysis" nil nil nil "4" nil nil (number " " mark "   Alan
Bridle   Apr 8   11/404   " thread-indent "\"Spectral analysis\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA29124; Thu, 8 Apr 1993 18:04:02 -0400
Message-Id: <9304082204.AA29124@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Spectral analysis
Date: Thu, 8 Apr 1993 18:04:02 -0400

Hello again Mark,

I just had a further talk with Chris C. about the spectral
analysis code that he and Paddy had used within AIPS.
It's not part of the standard AIPS distribution so will
have to be compiled from source and separately linked to
AIPS (we'll need some help with details on this from the
AIPS people). But bottom line is that Chris will E-mail
you the source code some time very soon.

A.

From mswain Mon Apr 12 16:06:21 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["410" "Mon" "12" "April" "1993" "16:06:20" "-0400" "Mark Swain" "mswain "
"<9304122006.AA24336@polaris.cv.nrao.edu>" "13" "Re: Rochester" nil nil nil "4" nil
nil (number " " mark " R Mark Swain   Apr 12   13/410   " thread-indent
"\"Re: Rochester\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA24336; Mon, 12 Apr 1993 16:06:20 -0400
Message-Id: <9304122006.AA24336@polaris.cv.nrao.edu>
References: <9304121841.AA24957@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: Rochester
Date: Mon, 12 Apr 1993 16:06:20 -0400

Alan,
   The new qual date and time is Monday, the 26th at 1:00 pm.
The qual may run right up until the time of your talk at 4:00.
Since the qual is now on Monday, we have the option of leaving
on Tuesday. Have you spoken to Jack Thomas about having
Rochester provide a hotel for you on Sunday and Monday nights?
   The correct email address to send your c.v. to is:

JUNE@BUCKWHEAT.PAS.ROCHESTER.EDU

Mark

From abridle Mon Apr 12 16:21:34 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["2224" "Mon" "12" "April" "1993" "16:21:05" "-0400" "Alan Bridle" "abridle "
nil "65" "Vita for A.H.Bridle" nil nil nil "4" nil nil (number " " mark " Alan
Bridle Apr 12 65/2224 " thread-indent "\"Vita for A.H.Bridle\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA24555; Mon, 12 Apr 1993 16:21:05 -0400
Message-Id: <9304122021.AA24555@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: june@buckwheat.pas.rochester.edu
Subject: Vita for A.H.Bridle
Date: Mon, 12 Apr 1993 16:21:05 -0400

Attn: Betty Cook
Administrative Assistant for Graduate Studies
Department of Physics and Astronomy

I am supervising Mark Swain's Ph.D. thesis research while he is in the NRAO pre-doctoral fellowship program. Mark recently mentioned to me that you will need a copy of my c.v. on file at Rochester before he takes his Ph.D. qualifying exam later this month. Here is a very brief version. Please let me know if any further information is needed and I will update it accordingly.

Alan Bridle
NRAO, Charlottesville
(abridle@nrao.edu)

==========

A.H.Bridle - Vita

Name: Alan Henry Bridle

Birth: 2 September 1942
Harrow, U.K.

Education: Secondary (1954-1960):
University College School, London, U.K.

Undergraduate (1960-63):
University of Cambridge, U.K.
B.A. (Theoretical Physics), First Class Honours, 1963

Graduate (1963-67):
University of Cambridge, U.K.
Ph.D. (Radio Astronomy), 1967

Positions held:

1967 Postdoctoral Fellow, Cavendish Laboratory, Cambridge, U.K.
1967-73 Assistant Professor of Physics, Queen's University, Canada
1970 Visiting Assistant Scientist, National Radio Astronomy Observatory

1973-79 Associate Professor of Physics, Queen's University, Canada
1979-83 Professor of Physics, Queen's University, Canada
1980-82 Visiting Scientist, National Radio Astronomy Observatory
Adjunct Professor of Physics, University of New Mexico
1983-93 Scientist (Basic Research), National Radio Astronomy Observatory
Research Professor of Astronomy, University of Virginia

Current address:

Alan H. Bridle
National Radio Astronomy Observatory
520 Edgemont Road
Charlottesville, VA 22903-2475

Telephone: (804)-296-0375
InterNet: abridle@nrao.edu

==========

From abridle Mon Apr 12 16:34:37 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["532" "Mon" "12" "April" "1993" "16:34:26" "-0400" "Alan Bridle" "abridle "
nil "14" "Talk visit" nil nil nil "4" nil nil (number " " mark "   Alan Bridle
Apr 12   14/532   " thread-indent "\"Talk visit\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA29763; Mon, 12 Apr 1993 16:34:26 -0400
Message-Id: <9304122034.AA29763@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: jhth@db1.cc.rochester.edu
Subject: Talk visit
Date: Mon, 12 Apr 1993 16:34:26 -0400

Hello again Jack,

Mark Swain has just told me that he's (re)scheduled his qualifying exam so it looks as if we can now make some definite arrangements re coming and going. Mark and I will travel together in my car arriving in Rochester in the evening of Sunday, April 25th and will return together, leaving on the morning of Tuesday, April 27th.

Could you have someone arrange me some accommodation for the nights of Sunday, April 25th and Monday, 26th?

Thanks much. I am looking forward to visiting with you all.

Alan Bridle

From root Tue Apr 13 10:00:18 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["386" "Tue" "13" "April" "1993" "09:58" "EST"
"MKFA@spanky.pas.rochester.edu" "MKFA@spanky.pas.rochester.edu"
"<01GWYINZEE8G96VJVP@spanky.pas.rochester.edu>" "15" "Hotel reservations" nil nil
nil "4" nil nil (number " " mark " R MKFA@spanky.pas.r Apr 13   15/386   "
thread-indent "\"Hotel reservations\"\n") nil]
      nil)
Received: from spanky.pas.rochester.edu by polaris.cv.nrao.edu (AIX 3.2/UCB
5.64/4.03)
          id AA23485; Tue, 13 Apr 1993 10:00:16 -0400
Received: from spanky.pas.rochester.edu by spanky.pas.rochester.edu (PMDF
 #12506) id <01GWYINZEE8G96VJVP@spanky.pas.rochester.edu>; Tue,
 13 Apr 1993 09:58 EST
Message-Id: <01GWYINZEE8G96VJVP@spanky.pas.rochester.edu>
X-Vms-To: IN%"abridle@polaris.cv.nrao.edu" JNET%"jhth@uordbv"
From: MKFA@spanky.pas.rochester.edu
To: abridle@polaris.cv.nrao.edu
Subject: Hotel reservations
Date: Tue, 13 Apr 1993 09:58 EST

Prof. Bridle,

I have arranged hotel reservations for you at the Hampton Inn.
Take 390 north to exit #16 (E. Henrietta Road - Rt. 15A) the
Inn is just south of the expressway, next to Grisante's (Mark should
know exactly where this is).

      Hampton Inn
      717 East Henrietta Road
      Rochester, NY 14623
      716-272-7800

Your confirmation number is 88131242.

-Marilee, Asst. to J. H. Thomas

From abridle Tue Apr 13 11:39:16 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["224" "Tue" "13" "April" "1993" "11:39:00" "-0400" "Alan Bridle" "abridle "
nil "11" "Re: Hotel reservations" nil nil nil "4" nil nil (number " " mark "
Alan Bridle   Apr 13   11/224   " thread-indent "\"Re: Hotel reservations\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA33120; Tue, 13 Apr 1993 11:39:00 -0400
Message-Id: <9304131539.AA33120@polaris.cv.nrao.edu>
References: <01GWYINZEE8G96VJVP@spanky.pas.rochester.edu>
From: abridle (Alan Bridle)
To: MKFA@spanky.pas.rochester.edu
Subject: Re: Hotel reservations
Date: Tue, 13 Apr 1993 11:39:00 -0400

Thanks for reserving the hotel room for my visit, Marilee.

I'll probably be arriving later than 6 p.m. on the Sunday evening, but
I presume the reservation is guaranteed so that won't matter?

Thanks again,

Alan Bridle

From root Mon Apr 26 08:29:22 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["654" "Mon" "26" "April" "93" "06:29:12" "MDT" "Chris Carilli"
"ccarilli@aoc.nrao.edu" "<9304261229.AA10799@ranger.aoc.nrao.edu>" "16" "image" nil
nil nil "4" nil nil (number " " mark " R Chris Carilli   Apr 26   16/654   "
thread-indent "\"image\"\n") nil]
      nil)
Received: from ranger.aoc.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA33286; Mon, 26 Apr 1993 08:29:21 -0400
Received: by ranger.aoc.nrao.edu (4.1/1.3pmg)
      id AA10799; Mon, 26 Apr 93 06:29:12 MDT
Message-Id: <9304261229.AA10799@ranger.aoc.nrao.edu>
From: Chris Carilli <ccarilli@aoc.nrao.edu>
To: abridle
Subject: image
Date: Mon, 26 Apr 93 06:29:12 MDT

i've put the cygnus a 6cm, 2cm, and 20cm images in my FITS area. you'all
can grab them at your leisure. following are instructions.
the images are called: CYGNUSA.6CM etc...
i suppose these will keep you busy for a while. keep me informed as to what
you'all are doing. it was nice having you here. hope to see you in leiden.
cc

to FTP files to/from my machine, the things to do are:

```
first:       ftp 146.88.6.3  (my machine = ranger)
then login:  aips            (aips passwd: Cyg_X-3)
then:        cd /DATA/RANGER_1/FITS (where images are stored)
then:        ls              (to see what's there)
```

make sure to set binary before data trasfer.

From abridle Wed Apr 28 08:58:20 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["531" "Wed" "28" "April" "1993" "08:58:19" "-0400" "Alan Bridle" "abridle "
nil "14" "Re: image" nil nil nil "4" nil nil (number " " mark "   Alan Bridle
Apr 28   14/531   " thread-indent "\"Re: image\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA19406; Wed, 28 Apr 1993 08:58:19 -0400
Message-Id: <9304281258.AA19406@polaris.cv.nrao.edu>
References: <9304261229.AA10799@ranger.aoc.nrao.edu>
From: abridle (Alan Bridle)
To: Chris Carilli <ccarilli@aoc.nrao.edu>
Subject: Re: image
Date: Wed, 28 Apr 1993 08:58:19 -0400

Hi Chris

Just got back from Rochester and found your Monday message re the Cyg
A images. Have copied across all that were there in your FITS area,
and took a quick look at them to make sure they're ok. The 2cm image
is a small (257 by 257) subimage of just the Sf hot spot at 0.12 by
0.11 resolution. Was that the one you intended?

Shall I ask Mark to arrange something with you re copying across the
spectral-aging source code, (or do you want to E-mail it to him if
that's simpler for you?).

Thanks a bunch for these, A.

From root Wed Apr 28 09:02:24 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["26" "Wed" "28" "April" "93" "07:02:13" "MDT" "Chris Carilli"
"ccarilli@aoc.nrao.edu" "<9304281302.AA12662@ranger.aoc.nrao.edu>" "2" "Re: image"
nil nil nil "4" nil nil (number " " mark " R Chris Carilli   Apr 28   2/26
" thread-indent "\"Re: image\"\n") nil]
      nil)
Received: from ranger.aoc.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA23784; Wed, 28 Apr 1993 09:02:23 -0400
Received: by ranger.aoc.nrao.edu (4.1/1.3pmg)
      id AA12662; Wed, 28 Apr 93 07:02:13 MDT
Message-Id: <9304281302.AA12662@ranger.aoc.nrao.edu>
From: Chris Carilli <ccarilli@aoc.nrao.edu>
To: abridle@polaris.cv.nrao.edu
Subject: Re: image
Date: Wed, 28 Apr 93 07:02:13 MDT

i'll email code today.
cc

From abridle Wed Apr 28 12:12:51 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["363" "Wed" "28" "April" "1993" "12:12:48" "-0400" "Alan Bridle" "abridle "
nil "10" "Re: image" nil nil nil "4" nil nil (number " " mark "   Alan Bridle
Apr 28   10/363   " thread-indent "\"Re: image\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA19570; Wed, 28 Apr 1993 12:12:48 -0400
Message-Id: <9304281612.AA19570@polaris.cv.nrao.edu>
References: <9304281302.AA12662@ranger.aoc.nrao.edu>
From: abridle (Alan Bridle)
To: Chris Carilli <ccarilli@aoc.nrao.edu>
Subject: Re: image
Date: Wed, 28 Apr 1993 12:12:48 -0400

Hi Chris,

Just to clarify, I did an   mget CYGNUSA.*   from ranger
this morning and got more than the radio images (we've deleted
the X ones as soon as we realized they were X-ray, not X-band,
of course) but maybe less than you thought was there at
U-band. Sorry for any confusion. I'll leave it to Mark
to sort out any remaining details with you.

Cheers, A.

From abridle Tue Jun 1 11:20:16 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["380" "Tue" "1" "June" "1993" "11:20:16" "-0400" "Alan Bridle" "abridle "
nil "10" "Re: forwarded message from Barry Clark" nil nil nil "6" nil nil (number "
" mark "   Alan Bridle   Jun 1   10/380   "
 thread-indent "\"Re: forwarded message from Barry Clark\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA22281; Tue, 1 Jun 1993 11:20:16 -0400
Message-Id: <9306011520.AA22281@polaris.cv.nrao.edu>
References: <9305271450.AA14950@polaris.cv.nrao.edu>
      <9305271457.AA15777@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: forwarded message from Barry Clark
Date: Tue, 1 Jun 1993 11:20:16 -0400

Just tidying up loose ends from last week ...

Re you going out to NM for the C-array run, this will work out
well as I'm going to be away from C'ville from July 29 to Aug
16th. I.e. you'd be "flying solo" for those two weeks in any
case. Put in a travel authorization request to Bob Brown to
make him aware of your plans as soon as you've decided how long
to go out for.

A.

From root Wed Jul 28 10:08:27 1993
X-VM-v5-Data: ([nil nil nil nil t nil t nil nil]
      ["134" "Wed" "28" "July" "1993" "08:08:22" "-0600" "Barry Clark"
"bclark@aoc.nrao.edu" "<199307281408.AA01463@bclark.aoc.nrao.edu>" "2" "AS 479 "
nil nil nil "7" nil nil (number " " mark " R Barry Clark   Jul 28   2/134
" thread-indent "\"AS 479 \"\n") nil]
      nil)
Received: from bclark.aoc.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA18183; Wed, 28 Jul 1993 10:08:26 -0400
Received: by bclark.aoc.nrao.edu (5.65c/1.3pmg)
      id AA01463; Wed, 28 Jul 1993 08:08:22 -0600
Message-Id: <199307281408.AA01463@bclark.aoc.nrao.edu>
From: Barry Clark <bclark@aoc.nrao.edu>
To: abridle
Subject: AS 479
Date: Wed, 28 Jul 1993 08:08:22 -0600

I have an extra half hour for your slot next week that I couldn't find another
use for: July 31 at 1600 LST to August 1 at 2030 LST.

From mswain Wed Jul 28 14:47:58 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["83" "Wed" "28" "July" "1993" "14:47:58" "-0400" "Mark Swain" "mswain " nil
"4" "Julian day number" nil nil nil "7" nil nil (number " " mark "   Mark Swain
Jul 28   4/83   " thread-indent "\"Julian day number\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA31032; Wed, 28 Jul 1993 14:47:58 -0400
Message-Id: <9307281847.AA31032@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: Julian day number
Date: Wed, 28 Jul 1993 14:47:58 -0400

According to Phill Hicks, the Julian day number refers to the siderial
day.

Mark

From mswain Thu Aug 12 14:47:16 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["5203" "Thu" "12" "August" "1993" "14:47:16" "-0400" "Mark Swain" "mswain "
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Aug 12 95/5203 " thread-indent "\"Socorro report\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA29287; Thu, 12 Aug 1993 14:47:16 -0400
Message-Id: <9308121847.AA29287@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: Socorro report
Date: Thu, 12 Aug 1993 14:47:16 -0400

Alan,
I thought I would give you a brief summary of this
trip while it is still fresh in my mind. On the hole,
it has been a very useflul trip due to the advice of
Mark Holdaway and Frazer Owen.
The computing situation has been a continued frustration.
It is my impression that mx cleans run consideribly slower
on this machine (Aztec) than on rhesus. Further, opon
finishing a large mx clean, the machine must be rebooted.
I have talked extensively with the personel here and sent
mail to Pat Murphy but no solutions have materialized.
According to Gustave, this problem has been seen
by other people; the source of the problems is a
subject of much contention presently. The basic
problem is that boid processes seem to get created
under certain quasi-repeatable conditions. These processes
start consuming a significant fraction of the cup as measrued
by monitor -top. However, them impzct of the biod processes
on the excution speed of a task seems to be out of proportion
to how much of the cup they take up. Thus if biod
processes take up %50 of the cpu, a given task might take
4 or 5 times as long. This problem is localized to the
IBM machines.
My stratagy for the image reduction was to put the
arrays together as fast as possible. I used a B model
(after carefully checking for evidence of fringing) to
cross calibrate the C uvdata set. As soon as possible,
I cross calibrated the D array daya on the BC model.
The combine BCD data set has been selfcalled onec and imaged
twice (for the east pointing). Problems in the clean image
are apparent; problems in the vtess image are sevear. The clean
image has several problem fringes localized to specific regions of
constant surface brightness - the classic clean instability.
The vtess image is dominated by a high frequency fringe whcih
covers the entire image. Back transforming the vtess image
revealed a spike at the uv distance corresponding to the
spatical frequency fo the image-wide fringe. I removed
the uv data associated with the bright feature in the uv
domain and reimaged the data set. Again, an almost indentical
fringe was present; back transforming showed a new peak in
the uv plane. Back transforming the dirty map shows a family of
peaks in the same area. For some reason, vtess makes a map
suffering the affects of on ly one of this family at a time.
However, kill off one of the peaks and vtess suffers from
another. I am currently experimenting with restricting the

uv range to exclude this family of peaks in the transform of a dirty image. My intent is not to proceed with further calibration untill I can get decent looking vtess images.

I suspect the above problem is identical to the fringe problem we were having with the C band A array image; at least the problems look very similar in the image domain. By the way, in neither the C band A array fring case nor in the X band BCD array fringe case do the uvdata responsible for the fringe show up in a radially averaged uvplot.

In discussions with Frazer about the artifacts (fringes) present in the C band BCD config immages, I charicterized the fringes a features which were present in both the cleaned immages and the vtess images and thus that the artifacts must have been calibrated in since they were not originally present. Frazers response was that this problem is not the classic clean instability. Acording to him, the classic clean instability is caused by mx putting too much or too little flux in between uv tracks in the uv domain. Since this "errent" flux lies in a region where there are no visabilities, it can not affect the uv data in self calibration. Thus fringes arrizing from the clean instability can not calibrate them selves in to the uv data *and* these artifacts should go away under an mem deconvolution. Now, since our fringes stay in place under an mem deconvolution, Frazer claims we are in awhole different ball game. My intent is to image each of the configurations seperately on identical grids and see if one configuration has the fringes. If that doesn't work, we may have a big problem; calibrating off vtess images might be the only solution. Although calib can accept an image as an imput model, that feature is said not to work. We can, however, back transform a vtess image and devide it into the data with uvsub, resort the visabilities and put the result into calib. I havent' tried this yet but Frazer has done it quite a bit.

Frazer also pointed out that the spectral index maps I made of the source are invalid since a lobe component was not subtracted from the total intensity images at each frequency. While his point is true in princible, it may be very difficult to define a "lobe component" in this source. High resolution images dont show any places (or not many any how) where I can convince my self that I am looking "between" filaments to some underlying lobe component. Running the source through a uv filter won't work because the filament are too long.

We really need the extra D array time at X band to make a good image. The off source large scale structure is still very prominant.

I trust your holiday went well.

Mark

From mswain Fri Aug 20 09:32:52 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["917" "Fri" "20" "August" "1993" "09:32:51" "-0400" "Mark Swain" "mswain "
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mark " Mark Swain Aug 20 19/917 " thread-indent "\"forwarded message
from Bill Cotton\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA20707; Fri, 20 Aug 1993 09:32:51 -0400
Message-Id: <9308201332.AA20707@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: forwarded message from Bill Cotton
Date: Fri, 20 Aug 1993 09:32:51 -0400

------- Start of forwarded message -------
Received: from gorilla.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA06002; Thu, 19 Aug 1993 20:29:35 -0400
Received: by gorilla.cv.nrao.edu (4.1/DDN-DLB/1.5)
id AA00887; Thu, 19 Aug 93 20:29:02 EDT
Message-Id: <9308200029.AA00887@gorilla.cv.nrao.edu>
References: <9308192115.AA17559@polaris.cv.nrao.edu>
From: bcotton@gorilla.CV.NRAO.EDU (Bill Cotton)
To: mswain@polaris.cv.nrao.edu (Mark Swain)
Subject: Re: mx image size
Date: Thu, 19 Aug 93 20:29:02 EDT

MX could probably be coaxed into making 8k images although it
involves buffer sizes as well as the allowed image sizes. Also it's
likely to run afoul of equivalences. A stronger reason for not doing
this is that few if any other tasks (or AIPS) can handle an 8k image.
If you could rotate it so it came out 4k x 8K that might work.
- -Bill
------- End of forwarded message -------

```
From abridle Tue Oct 19 14:15:42 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["3303" "Tue" "19" "October"
 "1993" "14:15:42" "-0400" "Alan Bridle" "abridle " nil "97" "Abstract draft" nil
nil nil "10" nil nil (number " " mark "     Alan Bridle       Oct 19   97/3303  "
thread-indent "\"Abstract draft\"\n") nil]
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Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA14722; Tue, 19 Oct 1993 14:15:42 -0400
Message-Id: <9310191815.AA14722@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Abstract draft
Date: Tue, 19 Oct 1993 14:15:42 -0400


How's this?

=========================

% AASABSMP.TEX -- AAS meeting electronic abstract sample.

% Don't remove the following comments; they identify the form.
%
% American Astronomical Society electronic abstract form.
% Meeting #183, January 11-14, 1994
%
% Abstract DEADLINE: October 23, 1993

\documentstyle[11pt,aasab]{article}
\nofiles

% Please leave runningident and session intact; don't delete them.

%\runningident{}
%\session{}{}

% In many of the commands that follow, sample information has been
% entered between the curly braces {}.  You should delete this text
% and replace it with your own correct information.  Please refer
% to the instructions if you have any questions.

\sessiontype{display}                   % REQUIRED
%\instructions{}                  % OPTIONAL

%\societysig{Ed./Curriculum}             % OPTIONAL
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%\societysig{HEAD II/SN}                 % OPTIONAL
%\societysig{ROSAT}                      % OPTIONAL
%\societysig{WGAIT}                      % OPTIONAL
%\societysig{WGAS}                           % OPTIONAL

\firstauthor{M.R.Swain}                 % REQUIRED
%\sponsor{}                       % OPTIONAL
\authoraddress{NRAO\\520 Edgemont Road\\Charlottesville, VA 22903}
\authorphone{804-296-0294}              % REQUIRED
\authoremail{mswain@nrao.edu}           % OPTIONAL
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\paymentmethod{PO}                          % REQUIRED
\accountnumber{40101-7031}                    % REQUIRED
\expirationdate{}
\billingaddress{NRAO\\520 Edgemont Road\\Charlottesville, VA 22903}

\begin{document}

\category{18}
\title{High-resolution VLA images of the jets and filaments in 3C353}
\author{M.R.Swain, A.H.Bridle}
\affil{NRAO}
\author{S.A.Baum}
\affil{STScI}

\begin{abstract}

3C\,353, a wide-lobed double source that is the fourth brightest radio
galaxy in the 3C Catalog (57 Jy at 1.4 GHz) is associated with an
elliptical galaxy in a Zwicky cluster at $z$=0.0304.  Previous VLA
observations detected a jet and counterjet, well defined but weak hot
spots (typical of sources just above the Fanaroff-Riley Type I to II
transition), and a rich complex of large-scale filaments throughout
both lobes, which cover over 5 arcmin on the sky..

We present sensitive new, high-resolution (0.4\prime\prime FWHM)
images of 3C\,353 in total and polarized intensity obtained by
combining data from the VLA's A,B,C and D configurations at 4.9 GHz.
These images reveal further structural complexity in both the jets and
the filaments.

The jet contains compact linear features oblique to its symmetry axis,
and several asymmetrically-placed knots within a smooth,
well-collimated envelope of emission.  The counterjet is similarly
well-resolved but also well-collimated.

The filaments contain a hierarchy of transverse scales, with some
apparent pairing of sub-filaments (or center-darkening of ribbon-like
features).  Some filaments are fully-resolved but others contain
regions of relatively bright, unresolved substructure, Work is in
progress to determine the spectral and polarimetric characteristics of
this hierarchy of structures in the filaments.

A dark spot that is prominent on lower-resolution radio images at all
radio wavelengths is now seen to be connected to other structure in
the east lobe.  Its origin remains unclear.

\end{abstract}

% Don't remove or comment out.

\admininfo
\end{document}
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From abridle Tue Oct 19 15:00:03 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
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" nil "107" "Draft of an AAS poster abstract - 3C353" nil nil nil "10" nil nil
(number " " mark " Alan Bridle Oct 19 107/3557 " thread-indent "\"Draft
of an AAS poster abstract - 3C353\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA41290; Tue, 19 Oct 1993 14:59:52 -0400
Message-Id: <9310191859.AA41290@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: sbaum@stsci.edu
Subject: Draft of an AAS poster abstract - 3C353
Date: Tue, 19 Oct 1993 14:59:52 -0400

Hi Stefi

We want to have a show-and-tell featuring Mark with the A+B+C+D
images at the AAS in Washington. Here's a draft of the
abstract. Is this o.k. by you? We can talk about
details of what to say/do in the poster when you visit in
December.

Best wishes

Alan

==========

```
% AASABSMP.TEX -- AAS meeting electronic abstract sample.

% Don't remove the following comments; they identify the form.
%
% American Astronomical Society electronic abstract form.
% Meeting #183, January 11-14, 1994
%
% Abstract DEADLINE: October 23, 1993

\documentstyle[11pt,aasab]{article}
\nofiles

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%\runningident{}
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% In many of the commands that follow, sample information has been
% entered between the curly braces {}.  You should delete this text
% and replace it with your own correct information.  Please refer
% to the instructions if you have any questions.

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%\societysig{Ed./Demos}                  % OPTIONAL
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%\societysig{HEAD II/SN}                  % OPTIONAL
%\societysig{ROSAT}                       % OPTIONAL
%\societysig{WGAIT}                       % OPTIONAL
%\societysig{WGAS}                           % OPTIONAL

\firstauthor{M.R.Swain}                   % REQUIRED
%\sponsor{}                           % OPTIONAL
\authoraddress{NRAO\\520 Edgemont Road\\Charlottesville, VA 22903}
\authorphone{804-296-0294}                % REQUIRED
\authoremail{mswain@nrao.edu}             % OPTIONAL
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\accountnumber{40101-7031}                  % REQUIRED
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\begin{document}

\category{18}
\title{High-resolution VLA Images of the Jets and Filaments in 3C353}
\author{M.R.Swain, A.H.Bridle}
\affil{NRAO}
\author{S.A.Baum}
\affil{STScI}

\begin{abstract}

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this hierarchy of structures in the filaments.

A dark spot that is prominent on lower-resolution radio images at all
radio wavelengths is now seen to be connected to other structure in
the east lobe.  Its origin remains unclear.

\end{abstract}

% Don't remove or comment out.
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From abridle Tue Nov 2 19:34:35 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
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" nil "120" "forwarded message from Wil van Breugel" nil nil nil "11" nil nil
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"\"forwarded message from Wil van Breugel\"\n") nil]
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Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA27701; Tue, 2 Nov 1993 19:34:35 -0500
Message-Id: <9311030034.AA27701@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: forwarded message from Wil van Breugel
Date: Tue, 2 Nov 1993 19:34:35 -0500

------- Start of forwarded message -------
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA39609; Tue, 2 Nov 1993 18:45:32 -0500
Received: from sundial.llnl.gov by cv3.cv.nrao.edu (4.1/DDN-DLB/1.13)
      id AA22308; Tue, 2 Nov 93 18:45:27 EST
Received: by sundial.llnl.gov (4.1/LLNL-1.18)
      id AA06714; Tue, 2 Nov 93 15:38:22 PST
Message-Id: <9311022338.AA06714@sundial.llnl.gov>
From: wil@sundial.llnl.gov (Wil van Breugel)
To: adv@sundial.llnl.gov
Subject: post doctoral positions
Date: Tue, 2 Nov 93 15:38:22 PST

Dear colleague, we would appreciate if you could bring the attached
advertisement to the attention of interested candidates. Please note
that American citizenship is NOT a requirement for these positions
(contrary to the advertisement in the AAS bulletin and Physics Today).
- --

POSTDOCTORAL POSITIONS IN ASTROPHYSICS

University of California
Institute of Geophysics and Planetary Physics
Lawrence Livermore National Laboratory
- --

The
 Institute of Geophysics and Planetary Physics (IGPP) at Lawrence
Livermore National Laboratory (LLNL) anticipates having several
postdoctoral positions available in its astrophysics program starting
in the fall of 1994. In addition, depending on a successful completion
of the HST refurbishment mission at the end of 1993, it is expected
that one or more postdoctoral NASA/HST funded positions will be
available for collaborations with IGPP staff and postdocs on HST
observations of radio galaxies and quasars.

Successful candidates for the IGPP/LLNL positions will be expected to
conduct a vigorous and significant program of independent research.
Applicants' fields of research may be in any area of astrophysics:
observational, theoretical, computational, or experimental. Areas being
pursued by IGPP and LLNL staff include high energy astrophysics, plasma
astrophysics, nuclear and particle astrophysics, star formation and
stellar evolution, X-ray binaries, galactic radio and infrared studies,

galaxy formation and evolution, active galactic nuclei, extra-galactic radio sources, and cosmology. Major projects currently underway at IGPP/LLNL are:

1) The development of adaptive optics and laser guide star systems for use at the Lick and Keck observatories, which will allow to correct for atmospheric seeing effects (Claire Max);

2) Searches for dark matter (Massive Compact Halo Objects - MACHO's) at Mount Stromlo Observatory (Australia) using novel large field of view optics and large format CCD's (Charles Alcock);

3) Ground- and space-based observational studies of various radio source populations, including high redshift radio galaxies and quasars, imaging and spectropolarimetry of nearby radio galaxies, and superluminous far infrared galaxies (Wil van Breugel);

4) The FIRST (Faint Image of the Radio Sky at 21 cm) all sky radio survey with the Very large Array (B-configuration) which will provide a catalog of millions of radio sources for comparison with surveys in other wavebands (Bob Becker).

Candidates for the NASA/HST funded position(s) will be expected to participate in ongoing work related to several approved HST cycle 4 projects on imaging polarimetry, high redshift radio galaxies, and quasars.

Postdoctoral fellows at IGPP will have access to LLNL's unique resources including supercomputers, the facilities of LLNL's Laboratory for Experimental Astrophysics (LEA), and Lick Observatory. IGPP also supports research with a 10 micron imaging camera in collaboration with LEA and the Space Sciences Laboratory at UC Berkeley, and with an automated fiber-fed multi-object spectrograph designed and built at LEA in collaboration with UC Santa Cruz faculty.

We especially encourage candidates to apply with interest in the following areas:

- - optical and infrared imaging and spectropolarimetry,
- - multi-object spectroscopy,
- - Galactic and extra-galactic infra-red spectroscopy,
- - X-ray astronomy,
- - cosmology, including particle and nuclear astrophysics, and galaxy formation/evolution,
- - adaptive optics,
- - experimental dark matter searches.

IGPP has a large network of SUN workstations and access to LLNL's supercomputer and image processing facilities. All major astronomical image analysis programs are available. In a joint effort with UC Davis faculty software is being developed for fast and flexible analysis of large astronomical catalogs. The IGPP hosts collaborators from all campuses of University of California and has an extensive postdoctoral and visitor program.

The IGPP postdoctoral appointments will be for one year, renewable for up to three years. The NASA/HST position(s) will be for one year, with possible renewal for one or two years depending on the availability of further funding. Salary and fringe benefits are very competitive, and adequate travel support will be made available. Applications may be made at any time, but serious consideration of candidates will commence DECEMBER 15 1993. Applicants should send their curriculum vitae, bibliography and a description of their planned research program to Dr.

Wil van Breugel, Institute of Geophysics and Planetary Physics,
Lawrence Livermore National Laboratory, 7000 East Ave, P.O. Box 808,
L-413, Livermore, CA 94550. They should also arrange for three letters
of recommendation to be sent to this same address. A copy of the
application material should be send to Phil Harding, Lawrence Livermore
National Laboratory, Professional Employment Division, PO Box 5510,
L-275, Dept.#A92332PH, Livermore, CA 94551.

********* Please note: American citizenship is NOT a requirement. ********
(contrary to the advertisement in the AAS bulletin and Physics Today).

For further information please contact Dr. Wil van Breugel at IGPP,
Phone (510)-422-7195, FAX (510)-423-0238, or by email (Internet):
wil@sunlight.llnl.gov.

- ---
------- End of forwarded message -------

From abridle Mon Nov 15 13:50:18 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
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Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA42289; Mon, 15 Nov 1993 13:50:18 -0500
Message-Id: <9311151850.AA42289@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: AS510
Date: Mon, 15 Nov 1993 13:50:18 -0500

The tape may be here this afternoon if we're real lucky. If not,
it will be here this evening.

There's a huge snowstorm moving in. We can probably
expect poor phase stability as the front crossed the array.

Cheers, A.

From mswain Mon Nov 15 15:45:07 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["2255" "Mon" "15" "November" "1993" "15:45:07" "-0500" "Mark Swain" "mswain
" nil "45" "Re: AS510" nil nil nil "11" nil nil (number " " mark "   Mark Swain
Nov 15   45/2255 " thread-indent "\"Re: AS510\"\n") nil]
      nil)
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          id AA34891; Mon, 15 Nov 1993 15:45:07 -0500
Message-Id: <9311152045.AA34891@polaris.cv.nrao.edu>
References: <9311151850.AA42289@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: AS510
Date: Mon, 15 Nov 1993 15:45:07 -0500

Well, it's going to be tomarrow before I start calibrating
that data any way. I just finished the Hubble application -
it has taken far more time than I thought it would. Stefi
seems to like it though.

Redoing the C band, A array selfcalibration from scratch
with all the uv data does not improve the residual fringe
amplitudes in the slice ensamble when compared to selfcalibrating
the the restricted uv data set. The bad news is that it meens
we are stuck with fringe like features in the image wich are of
order the thermal noise. The good news is that we are finished
with the A and B array calibration. Really, after the new D
data is put in I think we will be through with C band.

Several more post-doc application deadlines are looming - I am
going to try to do the bulk of the work associated with the
applications before you get back.

I haven't worked on the data reduction chapter at all since before
you left so shipping you anything on the 18th looks completely out
of the question.

Please fax me a copy of the operators log when you put the filled
data for C band on disk (fax#=804-296-0278).

Oh by the way, I reworked the observe file. I called up the
observers who are scheduled directly before us and got the
position in which they were leaving the array and put those
coordinates into the starting conditions in observe. While the
array still points at 353 before anything else, it has a built in
one munite time interval for loading our observe file and an initial
serries of six (3 pointings, twice each) short (2 or 3 min) observations
for redundancy. It is now more unlikely that any of the really
foreshotened baselines will be lost for any given pointing. I also
carefully picked the times when NRAO 530 would be observed so that
it would be observed in the same elevation angle range as the
low elevations observations of 3C353. This is to test to see if
we are picking up the LO signal because one antena has a near side-lobe
looking at the back of another. The NRAO 530 vis function should
always look like a point source to the D array (unless something
very exciting has happened recently) and since I observe NRAO 530
at several elevations its visability function should not be
time dependent!

Mark

From abridle Tue Nov 16 12:13:46 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["181" "Tue" "16" "November" "1993" "12:13:46" "-0500" "Alan Bridle" "abridle
" nil "11" "C Band data" nil nil nil "11" nil nil (number " " mark " Alan
Bridle Nov 16 11/181 " thread-indent "\"C Band data\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA16401; Tue, 16 Nov 1993 12:13:46 -0500
Message-Id: <9311161713.AA16401@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: C Band data
Date: Tue, 16 Nov 1993 12:13:46 -0500

are on acoma in /DATA/ACOMA_1/FITS

as 353D1193C.CBAND

There were 13038 shadowed visibilities out of 39440

FAX of operator's log is in secretary's pipeline.

A.

From abridle Tue Nov 16 15:50:49 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["451" "Tue" "16" "November" "1993" "15:50:48" "-0500" "Alan Bridle" "abridle
" nil "15" "X Band data" nil nil nil "11" nil nil (number " " mark "   Alan
Bridle   Nov 16   15/451   " thread-indent "\"X Band data\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA15666; Tue, 16 Nov
 1993 15:50:48 -0500
Message-Id: <9311162050.AA15666@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: X Band data
Date: Tue, 16 Nov 1993 15:50:48 -0500

are on acoma in /DATA/ACOMA_1/FITS/353D1193X.XBAND

30280 of 89884 visibilities were shadowed.

The shadowing is the price you pay for having some very short
baselines in the dataset. It should be no problem providing
not all of the calibrator data is shadowed for antennas that
can contribute to the 3C353 ultrashort spacings.

FILLM drops the shadowed data, so what you have left is the
"good stuff".   I hope there's enough of it.

Cheers, A.

From mswain Tue Nov 16 18:11:46 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["660" "Tue" "16" "November" "1993" "18:11:46" "-0500" "Mark Swain" "mswain "
nil "17" "Re: C Band data" nil nil nil "11" nil nil (number " " mark " Mark
Swain Nov 16 17/660 " thread-indent "\"Re: C Band data\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA40373; Tue, 16 Nov 1993 18:11:46 -0500
Message-Id: <9311162311.AA40373@polaris.cv.nrao.edu>
References: <9311161713.AA16401@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: C Band data
Date: Tue, 16 Nov 1993 18:11:46 -0500

Alan,

I'm confused. Does the C band data I retrieved from acoma
contain shadowed visabilities? Your first message said
that 13038 visabilities our of 39440 were shadowed in the
C band data. Your second message said that FILLM threw
out the shadowed visabilities for the X band data. Does that
imply that you filled the C band data and the X band data with
two different inputs (ie keep shadowed data for c band but
throw it out for x band)?

The C band data I retrieved fro acoma has 39440 visabilities
so until I hear otherwise, I am assuming that shadowed data
is included. I'm am unclear about the consiquences shadowed
keeping shadowed data.

Mark

From mswain Tue Nov 16 19:41:09 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["373" "Tue" "16" "November" "1993" "19:41:08" "-0500" "Mark Swain" "mswain "
"<9311170041.AA26608@polaris.cv.nrao.edu>" "10" "C band calibration" nil nil nil
"11" nil nil (number " " mark " R Mark Swain   Nov 16   10/373   " thread-
indent "\"C band calibration\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA26608; Tue, 16 Nov 1993 19:41:08 -0500
Message-Id: <9311170041.AA26608@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: C band calibration
Date: Tue, 16 Nov 1993 19:41:08 -0500

Alan,

The antenna gains for 3C286 and NRAO 530 consistantly differ
by a factor of 2. Since these observations overlap in time,
it is improbably that the gains represent something physical
about the array. Could this some how be related to having
shadowed data in with the "good" data? Those were amplitide
gains by the way. The phase gains are nice and stable.

Mark

From abridle Tue Nov 16 22:25:34 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["1177" "Tue" "16" "November" "1993" "22:25:34" "-0500" "Alan Bridle"
"abridle " nil "25" "Re: C band calibration" nil nil nil "11" nil nil (number " "
mark " Alan Bridle Nov 16 25/1177 " thread-indent "\"Re: C band
calibration\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA14893; Tue, 16 Nov 1993 22:25:34 -0500
Message-Id: <9311170325.AA14893@polaris.cv.nrao.edu>
References: <9311170041.AA26608@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: C band calibration
Date: Tue, 16 Nov 1993 22:25:34 -0500

FILLM was run the same way both times, and reported the number of shadowed visibilities. I passed these on to you as reported by FILLM in both cases, i.e. both data sets have approximately 1/3 of the data shadowed.

I was under the impression that FILLM was flagging them as bad using the 25-m spacing criterion. This is valid provided all of the antennas are pointing in the same direction. It will not catch shadowing by an antenna that is pointing elsewhere, as the uv dataset has no way of knowing whether antennas are pointing if they are not participating in the observation. This could arise from the antennas that are stowed for repairs, etc.

I believe that the number of data points in the FITS header includes both flagged and unflagged data. The simplest way for you to test, other than via LISTR, would be to run UVCOP invoking the option to discard all of the flagged data. The output data set should then be smaller by the number of shadowed visibilities.

All shadowed data must be discarded. There is no way to correct for the fact that the shadowed dish has neither the same illumination nor the same effective phase center as an unshadowed dish.

A.

From mswain Wed Nov 17 09:42:35 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["603" "Wed" "17" "November" "1993" "09:42:35" "-0500" "Mark Swain" "mswain "
nil "17" "Re: C band calibration" nil nil nil "11" nil nil (number " " mark "
Mark Swain   Nov 17   17/603   " thread-indent "\"Re: C band calibration\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA32638; Wed, 17 Nov 1993 09:42:35 -0500
Message-Id: <9311171442.AA32638@polaris.cv.nrao.edu>
References: <9311170041.AA26608@polaris.cv.nrao.edu>
      <9311170325.AA14893@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: C band calibration
Date: Wed, 17 Nov 1993 09:42:35 -0500

Alan,

The C band data have no flagged visabilities. There isn't even
a flag table. I suspect that FILLM was not flagging the shadowed
visabilities as bad.

I checked your inputs to FILLM and cparm(4)=0 so data within
the 25 meter limit should have been droped. But it was not
dropped by flagging because neither of the uv data file sitting
on acoma's disk have any FG tables.

Is there some possibility that the shadowed data never make it
off the tape? In that case the 39440 visabilities in the C
band data would all be good *and* the 13000 odd bad visabilities
never made it off the tape.

Mark

From mswain Wed Nov 17 09:52:27 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["86" "Wed" "17" "November" "1993" "09:52:27" "-0500" "Mark Swain" "mswain "
nil "2" "FILLM" nil nil nil "11" nil nil (number " " mark "   Mark Swain
Nov 17   2/86   " thread-indent "\"FILLM\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA14595; Wed, 17 Nov 1993 09:52:27 -0500
Message-Id: <9311171452.AA14595@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: FILLM
Date: Wed, 17 Nov 1993 09:52:27 -0500

Pat checked the code for FILLM; shadowed data never
get off the tape with cparm(4)=0.

From abridle Wed Nov 17 11:37:29 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["597" "Wed" "17" "November" "1993" "11:37:29" "-0500" "Alan Bridle" "abridle
" nil "18" "Re: FILLM" nil nil nil "11" nil nil (number " " mark "   Alan Bridle
Nov 17   18/597   " thread-indent "\"Re: FILLM\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA42156; Wed, 17 Nov 1993 11:37:29 -0500
Message-Id: <9311171637.AA42156@polaris.cv.nrao.edu>
References: <9311171452.AA14595@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: FILLM
Date: Wed, 17 Nov 1993 11:37:29 -0500

Sounds good, even safer than flagging.

If there are no shadowed data, the factor of 2 discrepancy you
mentioned between amplitude gains on NRAO 530 and 3C286 calls into
question the method by which you determined the flux density for NRAO
530.

Did you somehow manage to derive a flux density for NRAO 530
that was off by a factor of 2? Did you put in the correct flux
density for NRAO 530 using SETJY?

I can't think of anything else that would lead to a factor of
2 discrepancy at C Band, especially not if it is repeatable
between the 286/530 comparisons and if it affects all
antennas.

A.

From mswain Wed Nov 17 18:42:36 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["293" "Wed" "17" "November" "1993" "18:42:36" "-0500" "Mark Swain" "mswain "
"<9311172342.AA36621@polaris.cv.nrao.edu>" "8" "C band data" nil nil nil "11" nil
nil (number " " mark " R Mark Swain   Nov 17   8/293   " thread-indent "\"C
band data\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA36621; Wed, 17 Nov 1993 18:42:36 -0500
Message-Id: <9311172342.AA36621@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: C band data
Date: Wed, 17 Nov 1993 18:42:36 -0500

The indication is that the additional C band data
reduces the amplitude of the large fringe 3C353 sits
on top of from a peak-to-peak amplitude of 55 mJy to
16 mJy.

Also, I was mistaken about the additional uvdata not
improving the A array calibration. It seems to improve
it consideribly.

From mswain Thu Nov 18 08:59:15 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["157" "Thu" "18" "November" "1993" "08:59:14" "-0500" "Mark Swain" "mswain "
nil "4" "Re: C band data" nil nil nil "11" nil nil (number " " mark " Mark
Swain Nov 18 4/157 " thread-indent "\"Re: C band data\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA36938; Thu, 18 Nov 1993 08:59:14 -0500
Message-Id: <9311181359.AA36938@polaris.cv.nrao.edu>
References: <9311172342.AA36621@polaris.cv.nrao.edu>
<9311180048.AA26444@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: C band data
Date: Thu, 18 Nov 1993 08:59:14 -0500

I tried making an accessment of recalibration of
the A array data (using all baselines) without
looking at the SN plots - and I got bitten in the
booboo.

From abridle Thu Nov 18 11:25:08 1993
X-VM-v5-Data:
 ([nil nil nil nil nil nil nil nil nil]
      ["501" "Thu" "18" "November" "1993" "11:25:08" "-0500" "Alan Bridle" "abridle
" nil "16" "Re: C band calibration" nil nil nil "11" nil nil (number " " mark "
Alan Bridle   Nov 18   16/501   " thread-indent "\"Re: C band calibration\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA43671; Thu, 18 Nov 1993 11:25:08 -0500
Message-Id: <9311181625.AA43671@polaris.cv.nrao.edu>
References: <9311170041.AA26608@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: C band calibration
Date: Thu, 18 Nov 1993 11:25:08 -0500

Mark Swain writes:
 > Alan,
 >
 > The antenna gains for 3C286 and NRAO 530 consistantly differ
 > by a factor of 2. Since these observations overlap in time,
 > it is improbably that the gains represent something physical
 > about the array. Could this some how be related to having
 > shadowed data in with the "good" data? Those were amplitide
 > gains by the way. The phase gains are nice and stable.
 >
 > Mark

This was the message that I did not understand. What
was going on here?

A.

From mswain Thu Nov 18 13:34:03 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["429" "Thu" "18" "November" "1993" "13:34:03" "-0500" "Mark Swain" "mswain "
"<9311181834.AA21409@polaris.cv.nrao.edu>" "8" "Re: C band calibration" nil nil nil
"11" nil nil (number " " mark " R Mark Swain   Nov 18   8/429   " thread-
indent "\"Re: C band calibration\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA21409; Thu, 18 Nov 1993 13:34:03 -0500
Message-Id: <9311181834.AA21409@polaris.cv.nrao.edu>
References: <9311170041.AA26608@polaris.cv.nrao.edu>
      <9311181625.AA43671@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: C band calibration
Date: Thu, 18 Nov 1993 13:34:03 -0500

Oh that. I looked at the gains for NRAO 530 before I
ran getjy. Since I didn't fully understand what I was
doing (ie, the gains solutions should be different until
getjy is run) I attributed the difference gains of NRAO 530
and 3C286 as potentially due to some affect of shadowing.
Since your original message implied that 13000 visibilities
out of the 39440 visibilities present were bad, everything
seeded self consistant.

From abridle Thu Nov 18 15:21:43 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["1266" "Thu" "18" "November" "1993" "15:21:42" "-0500" "Alan Bridle"
"abridle " nil "33" "Re: C band calibration" nil nil nil "11" nil nil (number " "
mark "   Alan Bridle   Nov 18   33/1266 " thread-indent "\"Re: C band
calibration\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA16358; Thu, 18 Nov 1993 15:21:42 -0500
Message-Id: <9311182021.AA16358@polaris.cv.nrao.edu>
References: <9311170041.AA26608@polaris.cv.nrao.edu>
<9311181625.AA43671@polaris.cv.nrao.edu>
<9311181834.AA21409@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: C band calibration
Date: Thu, 18 Nov 1993 15:21:42 -0500

Mark Swain writes:
> Oh that. I looked at the gains for NRAO 530 before I
> ran getjy. Since I didn't fully understand what I was
> doing (ie, the gains solutions should be different until
> getjy is run) I attributed the difference gains of NRAO 530
> and 3C286 as potentially due to some affect of shadowing.
> Since your original message implied that 13000 visibilities
> out of the 39440 visibilities present were bad, everything
> seeded self consistant.

- OK, you might have noticed that the outer antennas in the D-array
would not have been shadowed, so should not have behaved like this,
however.

It was because you said _all_ antennas showed the same effect that I
suspected the flux density normalization process rather than
shadowing.

Note that severe shadowing (50%, as you suspected) would not
leave the phase gains undamaged. Indeed, if you move the center
of the illumination of the dish by 6 _meters_ by blocking
off half the aperture, the phases have long since wound
into oblivion. This is why never reading the shadowed data
off the tape is a good idea!

Fine so long as all is now calibrating OK and there was enough
data at >=25-m separations to straighten your images out.

I hope the 8-GHz stuff works as well.

Cheers, A.

From mswain Tue Nov 23 09:27:34 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["545" "Tue" "23" "November" "1993" "09:27:34" "-0500" "Mark Swain" "mswain "
"<9311231427.AA39626@polaris.cv.nrao.edu>" "12" "Re: Nov 15 data" nil nil nil "11"
nil nil (number " " mark " R Mark Swain   Nov 23   12/545   " thread-indent
"\"Re: Nov 15 data\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA39626; Tue, 23 Nov 1993 09:27:34 -0500
Message-Id: <9311231427.AA39626@polaris.cv.nrao.edu>
References: <9311222307.AA42796@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: Nov 15 data
Date: Tue, 23 Nov 1993 09:27:34 -0500

The X and C band new D array observations are on truchas disk
and the polaris disk. I will be writting a tape shortly.

Currently, the best ABCD C band 353 image is catalog # 12 on
rhesus disk 4 (filename=353-c-abcd.rstor.3). This image is made
with restricted A configuration data so it's A config. calibration
and resolution are not optimal; also it lacks the new D config.
data.

I am trying to redo the multiconfiguration calibration using all
the A array data. Currently, calib seems to be broken and Eric
is investigating the problem.

From abridle Tue Nov 23 11:53:56 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["984" "Tue" "23" "November" "1993" "11:53:55" "-0500" "Alan Bridle" "abridle
" nil "24" "353 image" nil nil nil "11" nil nil (number " " mark "   Alan Bridle
Nov 23   24/984   " thread-indent "\"353 image\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA23544; Tue, 23 Nov 1993 11:53:55 -0500
Message-Id: <9311231653.AA23544@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: 353 image
Date: Tue, 23 Nov 1993 11:53:55 -0500

has no .HI file and is a couple of months old so my main question is
whether it was done with the correct weighting (i.e. was UVSRT run on
the data before MX)?

I'm having some more discussions with Jean and have grabbed the CLEAN
from file 11 and am now writing out the MEM from file 12 so we have
something better than her old stripey MEM copy to look at.

Got your note about the rhesus upgrade. Again I think the main
questions are whether it is likely to take the machine for >24 hrs,
and whether we will have the images we need for the poster much sooner
in any case. We don't want to be making images just before we go
to D.C., hopefully we'll be making the poster by then, not still
reducing the data!

But if the AAS week is a good week for Paul and you don't think
you can benefit from the faster cpu speed early in the data
reduction, the strategy you suggested may be appropriate. I do
not expect many people will be in CV trying to do data reduction
that week.

A.

From mswain Tue Nov 23 13:42:40 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["968" "Tue" "23" "November" "1993" "13:42:40" "-0500" "Mark Swain" "mswain "
"<9311231842.AA37583@polaris.cv.nrao.edu>" "20" "Re: 353 image" nil nil nil "11"
nil nil (number " " mark " R Mark Swain   Nov 23   20/968   " thread-indent
"\"Re: 353 image\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA37583; Tue, 23 Nov 1993 13:42:40 -0500
Message-Id: <9311231842.AA37583@polaris.cv.nrao.edu>
References: <9311231653.AA23544@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: 353 image
Date: Tue, 23 Nov 1993 13:42:40 -0500

The image I recomended was made without running uvsrt on
the data before mx clean. However, it had all uvdata
from baselines >350kilolamda deleted. That effectively
put all the data within the protion of the uv plane which
is gridded correctly - at the price of resolution and
calibration quality.

I am considering going up to Boston for a day to visit
the SMA. I've talked to Jim Moran about the project
some and it sounds like there are some interesting
problems to work on. The real reason for going up
would be to get specific descriptions of problems
which are potentially interesting to me and so they
can see me get all bright eyed and bushy-tailed
(excited and eager) about working on these probems.
It's a long trip and it would wipe out three days
which I can put to good use here so... if you think
it isn't worth my time to go up, tell me. Jim Moran
seemed to think it would be "great" if I could come up
but then again this is his pet project.

From abridle Tue Nov 23 14:36:06 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["114" "Tue" "23" "November" "1993" "14:36:05" "-0500" "Alan Bridle" "abridle
" nil "5" "Re: 353 image" nil nil nil "11" nil nil (number " " mark "   Alan
Bridle   Nov 23   5/114   " thread-indent "\"Re: 353 image\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA16230; Tue, 23 Nov 1993 14:36:05 -0500
Message-Id: <9311231936.AA16230@polaris.cv.nrao.edu>
References: <9311231653.AA23544@polaris.cv.nrao.edu>
      <9311231842.AA37583@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: 353 image
Date: Tue, 23 Nov 1993 14:36:05 -0500

Re trip to Boston -- when? (you didn't say).

I would think that after the AAS meeting would be a good idea.

A.

From mswain Wed Nov 24 17:26:32 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["699" "Wed" "24" "November" "1993" "17:26:32" "-0500" "Mark Swain" "mswain "
"<9311242226.AA14917@polaris.cv.nrao.edu>" "18" "letters of
 recommendation" nil nil nil "11" nil nil (number " " mark " R Mark Swain
Nov 24   18/699   " thread-indent "\"letters of recommendation\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA14917; Wed, 24 Nov 1993 17:26:32 -0500
Message-Id: <9311242226.AA14917@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: letters of recommendation
Date: Wed, 24 Nov 1993 17:26:32 -0500

Alan,

There are 7 postdoc positions I am applying for which have Dec 15
deadlines and another with a Dec 20 deadline. Two of these, the
Jansky Fellowship and a Leiden University postdoc, are very
interesting to me. The Leiden University postdoc may reside in
Groningen and it is implied that the postdoc will work on
"studies of the early universe using radio sources".

"Various aspects of the program involve G. de Bruyn, P Katgert,
G. Miley and R. Schilizzi." The letter should be addressed to G.
Miley. As far as I can tell, this sounds like exactly what I
want.

Would you like me to email you a list of addresses and deadlines
for letters of refference due on or before Dec 20?

Mark

From abridle Wed Nov 24 18:22:37 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["617" "Wed" "24" "November" "1993" "18:22:36" "-0500" "Alan Bridle" "abridle
" nil "16" "Re: letters of recommendation" nil nil nil "11" nil nil (number " "
mark "   Alan Bridle   Nov 24   16/617   " thread-indent "\"Re: letters of
recommendation\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA13837; Wed, 24 Nov 1993 18:22:36 -0500
Message-Id: <9311242322.AA13837@polaris.cv.nrao.edu>
References: <9311242226.AA14917@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: letters of recommendation
Date: Wed, 24 Nov 1993 18:22:36 -0500

Given that there's no mail out of here until I leave, and
I'll be back in my office on the 6th, I think this can
wait until I'm back when all the logistics will be simpler.

I'll have a letter ready to go to Miley in my laptop.
Regular mail to Holland is <1 week and can anyway send an
E-mail copy saying that the paper one is in regular mail.

Just have all of your list ready when I show up.

Miley's program will almost certainly be the high-redshift,
steep-spectrum sample that he has been developing for a long time.
No VLBI polarimetry content that I know of, or are you no
longer concerned about that?

A.

From abridle Wed Nov 24 18:24:51 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["825" "Wed" "24" "November" "1993" "18:24:51" "-0500" "Alan Bridle" "abridle
" nil "21" "Re: 353 image" nil nil nil "11" nil nil (number " " mark "   Alan
Bridle   Nov 24   21/825   " thread-indent "\"Re: 353 image\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA30482; Wed, 24 Nov 1993 18:24:51 -0500
Message-Id: <9311242324.AA30482@polaris.cv.nrao.edu>
References: <9311231653.AA23544@polaris.cv.nrao.edu>
      <9311231842.AA37583@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: 353 image
Date: Wed, 24 Nov 1993 18:24:51 -0500

Mark Swain writes:
 >
 > I am considering going up to Boston for a day to visit
 > the SMA. I've talked to Jim Moran about the project
 > some and it sounds like there are some interesting
 > problems to work on. The real reason for going up
 > would be to get specific descriptions of problems
 > which are potentially interesting to me and so they
 > can see me get all bright eyed and bushy-tailed
 > (excited and eager) about working on these probems.
 > It's a long trip and it would wipe out three days
 > which I can put to good use here so... if you think
 > it isn't worth my time to go up, tell me. Jim Moran
 > seemed to think it would be "great" if I could come up
 > but then again this is his pet project.

You didn't say _when_ yet.

I think before the AAS isn't a great idea, after would be fine.

A.

From abridle Wed Nov 24 18:26:32 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["229" "Wed" "24" "November" "1993" "18:26:32" "-0500" "Alan Bridle" "abridle
" nil "8" "Re: Nov 15 data" nil nil nil "11" nil nil (number " " mark "   Alan
Bridle   Nov 24   8/229   " thread-indent "\"Re: Nov 15 data\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA13845; Wed, 24 Nov 1993 18:26:32 -0500
Message-Id: <9311242326.AA13845@polaris.cv.nrao.edu>
References: <9311222307.AA42796@polaris.cv.nrao.edu>
      <9311231427.AA39626@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: Nov 15 data
Date: Wed, 24 Nov 1993 18:26:32 -0500

Mark Swain writes:
 > The X and C band new D array observations are on truchas disk
 > and the polaris disk. I will be writting a tape shortly.

So can I simply dispose of the versions here? You don't need
any more backup?

A.

From mswain Wed Nov 24 18:53:49 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["219" "Wed" "24" "November" "1993" "18:53:48" "-0500" "Mark Swain" "mswain "
"<9311242353.AA21440@polaris.cv.nrao.edu>" "4" "Boston trip" nil nil nil "11" nil
nil (number " " mark " R Mark Swain   Nov 24   4/219   " thread-indent
"\"Boston trip\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA21440; Wed, 24 Nov 1993 18:53:48 -0500
Message-Id: <9311242353.AA21440@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: Boston trip
Date: Wed, 24 Nov 1993 18:53:48 -0500

Originally, I thought I might go next week but I think your
right that after the AAS would be a better time. I have
told Jim Moran and company that I am now thinking about
trying to go up there after the AAS meeting.

From abridle Wed Nov 24 19:38:55 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["666" "Wed" "24" "November" "1993" "19:38:55" "-0500" "Alan Bridle" "abridle
" nil "17" "Re: letters of recommendation" nil nil nil "11" nil nil (number " "
mark " Alan Bridle Nov 24 17/666 " thread-indent "\"Re: letters of
recommendation\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA40214; Wed, 24 Nov 1993 19:38:55 -0500
Message-Id: <9311250038.AA40214@polaris.cv.nrao.edu>
References: <9311242226.AA14917@polaris.cv.nrao.edu>
<9311242322.AA13837@polaris.cv.nrao.edu>
<9311242359.AA21448@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: letters of recommendation
Date: Wed, 24 Nov 1993 19:38:55 -0500

He has a general interest in radio galaxies. My guess
is that with this list of investigators his involvement
is fairly minor. The others are all more likely to be
the movers and shakers in that particular collaboration.

Only way to really assess where the emphasis might
be would be to contact the people involved and ask
them.

I thought this was an outgrowth of Miley's work on
finding high-reshift, high-power sources by sifting through
all the steep-spectrum ones (there being a correlation
between intrinsic radio power and integrated spectral
index). Take a look at the last Leiden Obs. annual
report in the CV library, this should give some details.

A.

From mswain Fri Nov 26 19:44:37 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["941" "Fri" "26" "November" "1993" "19:44:37" "-0500" "Mark Swain" "mswain "
nil "17" "Re: Boston trip" nil nil nil "11" nil nil (number " " mark "   Mark
Swain   Nov 26   17/941   " thread-indent "\"Re: Boston trip\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA19412; Fri, 26 Nov 1993 19:44:37 -0500
Message-Id: <9311270044.AA19412@polaris.cv.nrao.edu>
References: <9311242353.AA21440@polaris.cv.nrao.edu>
      <9311250044.AA40248@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: Boston trip
Date: Fri, 26 Nov 1993 19:44:37 -0500

The composit image seems to comming along fine. I've got the B
cross calibrated on the A and I'm about to cross calibrate the
C as well. The phase gain relative corrections are down to
about +- 5 degrees or better (best previous calibration for the
A data was +- 10 degrees or better). I'm carefully checking the
clean components to maker sure the model does not contain any
fringes. My goal is to keep rhesus busy as much as possible.

Eric has been experimenting with changing the AP size on
ringtail. Because of this ringtail has been unstable and
I have not started the X band calibration and imaging on
that machine. I have been doing some timing test on ringtail
and it seems that increasing the AP size does make mx
run faster. Unfortunatly, Eric can't increase the AP
memory size enough to do a 4kx4k deconvolution in memory
without causing aips to break. He is working on chasing
bugs excited by the large AP memory size.

From mswain Sun Dec 12 21:31:42 1993
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["963" "Sun" "12" "December" "1993" "21:31:41" "-0500" "Mark Swain" "mswain "
"<9312130231.AA26454@polaris.cv.nrao.edu>" "22" "polarization images" nil nil nil
"12" nil nil (number " " mark " R Mark Swain   Dec 12   22/963   " thread-
indent "\"polarization images\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA26454; Sun, 12 Dec 1993 21:31:41 -0500
Message-Id: <9312130231.AA26454@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: polarization images
Date: Sun, 12 Dec 1993 21:31:41 -0500

Alan,

I tried making Q and U images with the current c band calibration.
Two comments. First, when I made the %pol image by dividing the
polc image by the cleanded I image, almost everything was blanked
even when I set the blanking criteria for 0 sigma for the polc
map and 1 sigma for the I map. I'm puzzled by that. Secondly,
it still looks like there are deconvolution
 errors in the Q and
U images. I cleanded both down to about 10 times the noise.

It seemed that the deconvolution errors looked as though they came
for not cleaning deep enough so I cleaned the Q image much deeper.
Unfortunatly, the deconvolution errors appear to be just as prounounded
(comparison made by blinking the images).

I tried using utess but it blew up. Something about buffer sizes.

The Q and U images remain as fuzzy as ever. I haven't split out the
C and D data to see if the cross calibration degraded thier calibration
in some sense. That's next on the list.

Mark

From abridle Mon Dec 13 09:00:27 1993
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1085" "Mon" "13" "December" "1993" "09:00:26" "-0500" "Alan Bridle"
"abridle " nil "27" "Re: polarization images" "^From:" nil nil "12" nil nil (number
" " mark "   Alan Bridle   Dec 13   27/1085 " thread-indent "\"Re:
polarization images\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA33231; Mon, 13 Dec 1993 09:00:26 -0500
Message-Id: <9312131400.AA33231@polaris.cv.nrao.edu>
References: <9312130231.AA26454@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: polarization images
Date: Mon, 13 Dec 1993 09:00:26 -0500

Blanking sounds like what you would get if the I blank
was set too high, e.g. in wrong units.

Deconvolution errors on the strong features are usually
a problem with calibration rather than with the
actual deconvolution. Failure to deconvolve on the
hot spots has been a symptom of improper PCAL solutions.
Try it with just the B+C+D data, to see if the problem
localizes to the A.

As for UTESS "buffer size error", write the error down
and ask Bill or Eric whether they recognize it. Also
try running UTESS on a smaller image set (e.g. B+C+D)
and see whether you get the error there. It might
be a problem with the 4k by 4k imaging that requires
an array to expanded in the code. But you need the
actuall error message, not just "something about
buffer size", for anyone to diagnose what's going
on.

I noticed that the B+C+D P image is somewhat fuzzy relative
to the I image also. This is unusual, and may be real.
I forget what the A-only P image looked like. Were there
any significant features in it outside the hot spot and
jet, or is all the P structure resolving?

A.

From mswain Thu Mar 10 18:34:21 1994
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["262" "Thu" "10" "March" "1994" "18:34:21" "-0500" "Mark Swain" "mswain "
"<9403102334.AA35126@polaris.cv.nrao.edu>" "10" "jet expansion rate plot" nil nil
nil "3" nil nil (number " " mark " R Mark Swain   Mar 10   10/262   "
thread-indent "\"jet expansion rate plot\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA35126; Thu, 10 Mar 1994 18:34:21 -0500
Message-Id: <9403102334.AA35126@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: jet expansion rate plot
Date: Thu, 10 Mar 1994 18:34:21 -0500

Alan,

I seem to have misplaced the jet and counter-jet
expansion rate plot I showed at the AAS meeting.
Do you have a copy of that? If so, would you
fax a copy of it to me here at the AOC? I would
like to have around to show for Russian roulet.

Thanks,
Mark

From mswain Fri Mar 11 18:47:36 1994
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["3007" "Fri" "11" "March" "1994" "18:47:35" "-0500" "Mark Swain" "mswain "
"<9403112347.AA12855@polaris.cv.nrao.edu>" "69" "VTESS/UTESS" nil nil nil "3" nil
nil (number " " mark " R Mark Swain   Mar 11   69/3007 " thread-indent
"\"VTESS/UTESS\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA12855; Fri, 11 Mar 1994 18:47:35 -0500
Message-Id: <9403112347.AA12855@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: VTESS/UTESS
Date: Fri, 11 Mar 1994 18:47:35 -0500

Alan,

I put the following 4 quesitons to Tim Cornwell:

(1) Will he modify VTESS and UTESS to work with 8K images
(2) What is the proper way estimate the noise for VTESS
(3) What to do when VTESS fails to formally converge
(4) What does it mean when VTESS gets a sigma of less than
    one but fails to converge; dose the image in that case
    differ noticiably from one which has formally converged?

Replies:

(1) Tim has agreed to try to fix VTESS and UTESS this weekend
so that they will support 8K images.

(2) The method I use for estimating the noise (standard, off source
regions on a V map) is a very good way according to Tim; he could
not sugest a better way.

(3) In the case where VTESS fails to formally converge but
stopes making progress (sigma and the gradient stop decreasing
with additional itterations), then VTESS thinks the noise
parameter is too low. In the case where the noise is estimated
as described in (2), Tim maintains that VTESS has uncovered
some inconsistancy - such as the data not being well calibrated.
Since it is at L band where I have trouble getting VTESS to
converge, you may have a better idea if this could be true.
I'll try to check when I get back.

Often when VTESS fails formally to converge but stops making
progress, the images look very good. I asked Tim if thy
"functionally" differed from images for which formal
convergence was achieved. His reply is that there is no
"functional" (we never bothered to define what was ment
by "functional" but I the context implied that scientific results
would be invarient to a good aproximation) difference for
VTC images (convolved) but that there is for the VT (unconvolved)
images.

(4) VTESS requires a gradient of < .05 and a sigma
of < 1.05 to achieve formal convergence. When showed
a result meeting both criteria which still failed to converge,
Tim replied that "VTESS is just being finiky" and that more

itterations would formally do better but were probably not worth doing. In cases whre the convergence criteria are met but formal convergence is not achieved, Tim said more itteratins almost always cause formal convergence to be achieved.

Now a bit more about 8K images. It seems that Larry Rudnick is doing some observations of Cas A in a couple of weeks and needs 8Kx8K imaging ability. It seems that other (unnamed) parties want it as well. It also seems that some people do not approve of priviate coppies certain AIPS tasks and may even be slightly anoyed by it. Thier position might be tenable if AIPS had a reasonable level of support.

This may have the potential to ruffel a few feathers. Once 8Kx8K images are known to have been produced, othere people will want the capibility. I need only 4 tasks to work with 8K images (VTESS,UTESS,WFCLN and SUBIM) but I only need the inner 1/4. To be able to routinely work with 8kx8K images, lots of tasks need to be changed. This may put the whole issue neatly in the middle of the AIPS support v.s. AIPS ++ debate.

Mark

From mswain Thu Mar 17 19:35:01 1994
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["2793" "Thu" "17" "March" "1994" "19:35:00" "-0500" "Mark Swain" "mswain "
"<9403180035.AA17293@polaris.cv.nrao.edu>" "60" "AS529/%Pol images" nil nil nil "3"
nil nil (number " " mark " R Mark Swain   Mar 17   60/2793 " thread-indent
"\"AS529/%Pol images\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA17293; Thu, 17 Mar 1994 19:35:00 -0500
Message-Id: <9403180035.AA17293@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: AS529/%Pol images
Date: Thu, 17 Mar 1994 19:35:00 -0500

Alan,

The observations seem ok. I had some difficulty getting selfcal
to "take hold" (get enought flux in the model to make any progress)
but I think I have solved that problem. I have only been able to
work on the East pointing but that image seems "ok" to first
order. By this I mean that the core, hot-spots, jet and counter-
jet all show up clearly. The data simply arn't calibrated well
enough or deconvolved enough to see any filaments at this point.
Because I can see the above mentioned features and because the
model has enough flux prior to the first neg. cc to open the
uv range, I conclude these observations have no catastrophic
problems. The only problems I know of that occured during the
run were that I "stalled" the online system by lifting an
interlocked printer cover and a power supply failer caused
half the corrolator to shut off for about two hours.

I have described the problems with the %pol maps to
Rick Perley, Tim Cornwell, Mark Holaway and Ernie
Sequist (I'm not positive about the spelling but he
is from Toronto and he sends his regards). In each
case, I told them that we had well calibrated data
and that the Stokes I, Q and U maps as well as the P
maps look good on thier own but that the %P map has
non-physical values. I also told them that I had done
the deconvolutions under CLEAN and VTESS/UTESS respectively
and that the MEM route delivered less extreem non-physical
values for %P. I then asked "what is the problem and how
do I get rid of it."

All four said (with verying degrees of certainty) that the
problem was one of polariztion deconvolution. Tim and Mark
were particulary certain of this. It turns out the proper
way to do a polarization deconvolution is to deconvolve
I,Q,U,and V simaltanously subject to the constraint that
I^2<=Sart[Q^2+U^2+V^2]. Mark Holdaway wrote a deconvolution
program with such a constraint as part of his thesis and it
is part of the Braindise data reduction package. Unfortunately,
a deconvolution with this constraint is not going to be
implimented in AIPS before I defend.

I asked Mark how we could test his hypothesis that it is
polarization deconvolution errors that are leading to
problems with the %P maps. He recomenced simulating

some data and deconvolving it - I am currently working on this.

I asked Jean Elick how big a problem was it if we had no %P information. She thinks that is not catastorphic and that there are several diagnostics of filament physics which do not depend on it. The diagnostics are ones we know about and planned on doing - what I did not know was how a given diagnostic constrains the filament models.

All-in-all, I rate this as a highly successful trip. If your around on Tuesday, we can talk more then - I'll be taking Monday off.

Mark

From abridle Thu Mar 17 22:40:15 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["502" "Thu" "17" "March" "1994" "22:40:15" "-0500" "Alan Bridle" "abridle "
nil "14" "Re: AS529/%Pol images" nil nil nil "3" nil nil (number " " mark "
Alan Bridle   Mar 17   14/502   " thread-indent "\"Re: AS529/%Pol images\"\n")
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA28153; Thu, 17 Mar 1994 22:40:15 -0500
Message-Id: <9403180340.AA28153@polaris.cv.nrao.edu>
References: <9403180035.AA17293@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: AS529/%Pol images
Date: Thu, 17 Mar 1994 22:40:15 -0500

Glad to hear we were not snowed out again, though a 2-hr
correlator failure is scarcely good news.

I'm not sure about the idea that the problems
in %p are all deconvolution, though it is possible
that some of them are, because of the differences
between CLEAN and UTESS deconvolutions. I will
reserve judgement until we have done the test of
adding in extra short spacing info simulated from the
L Band data as we discussed before you left.

Have a good trip back, and thanks for the update,

    A.

From abridle Fri Mar 18 12:13:24 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1043" "Fri" "18" "March" "1994" "12:13:24" "-0500" "Alan Bridle" "abridle "
nil "31" "Summer student" nil nil nil "3" nil nil (number " " mark "   Alan
Bridle   Mar 18   31/1043 " thread-indent "\"Summer student\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA15464; Fri, 18 Mar 1994 12:13:24 -0500
Message-Id: <9403181713.AA15464@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Summer student
Date: Fri, 18 Mar 1994 12:13:24 -0500

Hi Mark,

Just to mention I'm going to have an undergraduate
student, Jacob Callcut from Michigan State, working with
me this summer. This brings up a couple of points.

Phyllis mentioned that you had rented to some summer
students last summer. Will you have any space for
rent at your house this summer? (he'll be here from
the last week of May until mid-August). If so, I
might get you into E-contact with him.

Second is that I'll be away for the last three weeks
he'll be here and it might be possible to have him
help you quite directly if (a) you're not finished
by then -- we need to talk about that contingency
in any case, and (b) some "help" with analysis
would actually speed you up rather than slow you down.
He knows some AIPS already and will know more by
then, as I'm going to have him work on some radio
galaxy imaging and polarimetry from other projects
of mine.

Anyway, think it over.

We should talk about summer strategy and your timescale
when you get back anyway. This is just another wrinkle
to that ...

A.

From abridle Tue Mar 22 14:07:04 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["1345" "Tue" "22" "March" "1994" "14:07:04" "-0500" "Alan Bridle" "abridle "
nil "34" "forwarded message from David DeGraff" nil nil nil "3" nil nil (number " "
mark " Alan Bridle Mar 22 34/1345 " thread-indent "\"forwarded message
from David DeGraff\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA23519; Tue, 22 Mar 1994 14:07:04 -0500
Message-Id: <9403221907.AA23519@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: forwarded message from David DeGraff
Date: Tue, 22 Mar 1994 14:07:04 -0500

------- Start of forwarded message -------
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA13189; Tue, 22 Mar 1994 13:58:20 -0500
Received: from FLORIS.ALFRED.EDU by cv3.cv.nrao.edu (4.1/DDN-DLB/1.13)
id AA07662; Tue, 22 Mar 94 13:58:19 EST
Received: from aucmpsci.alfred.edu by bigvax.alfred.edu (MX V3.3 VAX) with
SMTP; Tue, 22 Mar 1994 13:57:13 EST
Received: from merlin.alfred.edu.aucmpsci by aucmpsci.alfred.edu (4.1/SMI-4.1)
id AA16041; Tue, 22 Mar 94 13:56:36 EST
Received: by merlin.alfred.edu.aucmpsci (4.1/SMI-4.1) id AA07233; Tue, 22 Mar
94 13:56:35 EST
Message-Id: <9403221856.AA07233@merlin.alfred.edu.aucmpsci>
From: david@merlin.alfred.edu (David DeGraff)
To: abridle@NRAO.EDU
Date: Tue, 22 Mar 94 13:56:35 EST

Subject: multifractal code for Mark Swain
Alan-

I've got the code Mark will need to do the multifractal analysis
for 3c353, but I don't have an e-mail adress for him.
Could you either send me his e-mail adress or have him contact me
so I can send the code? Thanks.

I can't find my notes from the washington meeting. What was the
source you said you would be interested in re-observing with the
full array? Are you still interested?

I hope you got the copy of my thisis ok.

regards

david DeGraff
------- End of forwarded message -------

From mswain Thu May 12 10:35:02 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["1163" "Thu" "12" "May" "1994" "10:35:02" "-0400" "Mark Swain" "mswain " nil
"29" "trip/recomendation" nil nil nil "5" nil nil (number " " mark " Mark Swain
May 12 29/1163 " thread-indent "\"trip/recomendation\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA39232; Thu, 12 May 1994 10:35:02 -0400
Message-Id: <9405121435.AA39232@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: trip/recomendation
Date: Thu, 12 May 1994 10:35:02 -0400

Alan,

The trip to Rochesters was very productive! I got to talk
quite a lot to people in medical imaging and had a couple
of interviews as well. The eclipse viewing was good as well.

I also had an interview with Terry Herter at Cornell. He will
be advertising for a postdoc position during the next few
weeks but based on our interview, I have already applied.
The position is "some one to run my KAO observing program."
Since the job has not been anounced yet, there is no written
description to give to you. The duties of the position are
to make sure the groups IR spectrometer works, observe, and
help write proposals and papers. There are three people directly
involved with the instrument, 1 of whom I know very well.
Terry is also interested in developing a project in adaptive
optics but funding for that project will not be resolved for
two or three months. Anyway, I need a letter of recomendation.
Terry's address is:

Cornell University
212 Space Sciences Building
Ithaca, NY 14853

If your interested, I can tell you about the medical imaging
interviews on the way back from pizza lunch. Lots of very
interesting things going on.

Mark

From abridle Thu May 19 11:30:46 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["285" "Thu" "19" "May" "1994" "11:30:45" "-0400" "Alan Bridle" "abridle "
nil "8" "L Band" nil nil nil "5" nil nil (number " " mark " Alan Bridle
May 19 8/285 " thread-indent "\"L Band\"\n") nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA38607; Thu, 19 May 1994 11:30:45 -0400
Message-Id: <9405191530.AA38607@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: L Band
Date: Thu, 19 May 1994 11:30:45 -0400

You mentioned that a million visibilities was high for
this dataset on 3C353. From the archive records I have
just read in, there were about 750,000 to begin with.

If you are working with a lot less than this now, they may have
been time-averaged at some point. Worth checking.

A.

From mswain Thu May 19 11:43:28 1994
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["370" "Thu" "19" "May" "1994" "11:43:28" "-0400" "Mark Swain" "mswain "
"<9405191543.AA22180@polaris.cv.nrao.edu>" "11" "Re: L Band" nil nil nil "5" nil
nil (number " " mark " R Mark Swain   May 19   11/370   " thread-indent
"\"Re: L Band\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA22180; Thu, 19 May 1994 11:43:28 -0400
Message-Id: <9405191543.AA22180@polaris.cv.nrao.edu>
References: <9405191530.AA38607@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle (Alan Bridle)
Subject: Re: L Band
Date: Thu, 19 May 1994 11:43:28 -0400

I have 446,878 visibilities between A,B and C configs
at 1385 MHz. I have checked the history files of A and
B configs and if time-averaging was done, it is not
recorded. In fact, there is no record of FILLM, AVER,
TVAVG, or UVAVG at all.

The "bad" data you saw (with the exception of one 80 Jy point)
was created by an amplitude calibration. I am redoing it.

Mark

From abridle Thu May 19 11:57:24 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["574" "Thu" "19" "May" "1994" "11:57:23" "-0400" "Alan Bridle" "abridle "
nil "17" "Re: L Band" nil nil nil "5" nil nil (number " " mark "   Alan Bridle
May 19   17/574   " thread-indent "\"Re: L Band\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA38615; Thu, 19 May 1994 11:57:23 -0400
Message-Id: <9405191557.AA38615@polaris.cv.nrao.edu>
References: <9405191530.AA38607@polaris.cv.nrao.edu>
      <9405191543.AA22180@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: L Band
Date: Thu, 19 May 1994 11:57:23 -0400

OK, the original A config datset alone has 624,982
records. The B configuration has 110524 records,
and the C has 35402. Your total sounds as though
either half the A configuration data disappeared, or
(more likely) it was averaged to save disk space at
some point. FILLM was probably never run on it, as
the date were all on EXPORT tapes. These were
written on the VLA DEC-10 (long may it R.I.P.).

There is a possibility that early versions of UVAVG
did not write .HI files, as it was not written by
a regular AIPS programmer (Craig Walker did the first
pass).

A.

From root Mon Sep 19 17:28:16 1994
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
["779" "Mon" "19" "September" "94" "16:32:04" "CDT" "Hardee"
"hardee@venus.astr.ua.edu " "<9409192132.AA07984@venus.astr.ua.edu.ua.edu>" "15"
"Re: Mark Swain" nil nil nil "9" nil nil (number " " mark " R Hardee
Sep 19   15/779   " thread-indent "\"Re: Mark Swain\"\n") nil]
nil)
Received: from risc.ua.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA30575; Mon, 19 Sep 1994 17:28:15 -0400
Received: from hera.astr.ua.edu (hera.astr.ua.edu [130.160.100.15]) by risc.ua.edu
(8.6.5/8.6.4) with SMTP id QAA24855 for <abridle@polaris.cv.nrao.edu>; Mon, 19 Sep
1994 16:24:57 -0500
Received: from venus.astr.ua.edu.ua.edu by hera.astr.ua.edu (4.1/SMI-4.1)
id AA09438; Mon, 19 Sep 94 16:25:55 CDT
Received: by venus.astr.ua.edu.ua.edu (4.1/SMI-4.1)
id AA07984; Mon, 19 Sep 94 16:32:04 CDT
Message-Id: <9409192132.AA07984@venus.astr.ua.edu.ua.edu>
From: hardee@venus.astr.ua.edu (Hardee)
To: abridle@polaris.cv.nrao.edu
Subject: Re: Mark Swain
Date: Mon, 19 Sep 94 16:32:04 CDT

Alan,

I just wanted to tell you that I have decided to hire John Travis who is a theoretical student of Alan Marscher into my postdoc position. A letter is in the post to Mark Swain conveying my decision although I did not tell him who I chose. There were in fact three theoretical applicants who all looked good. Mark was basically number 4 on my list. I hope he is not too dissappointed but the situation here is not ideal for a young radio observer. I am much more confident in my abilities to direct a theoretician who in this case complements my own interests with a radiation code that I hope to couple to predicted jet dynamics. I hope that Mark will be considered for an NRAO postdoc. Feel free to convey any of this information on to Mark as you see fit.

Phil

From mswain Wed Sep 21 20:07:53 1994
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["612" "Wed" "21" "September" "1994" "20:07:52" "-0400" "Mark Swain" "mswain
" "<9409220007.AA35600@polaris.cv.nrao.edu>" "17" "noise numbers" nil nil nil "9"
nil nil (number " " mark " R Mark Swain   Sep 21   17/612   " thread-indent
"\"noise numbers\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA35600; Wed, 21 Sep 1994 20:07:52 -0400
Message-Id: <9409220007.AA35600@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: noise numbers
Date: Wed, 21 Sep 1994 20:07:52 -0400

X band data at 1385 resolution:
      (1) 4.52E-5
      (2) 1.55E-5
X band data w/ addition of short spacing "pseudo X" band data at 1385 res.:
      (1) 3.80E-5
      (2) 2.99E-5
X band V map at 1385 resolution:
      (1) 2.41E-5
      (2) 1.72E-5

-X band data at 1385 resolution means imaging w/ uvrange = 0,169.
-(1) is an average of the rms from 4 boxes placed N,S,E,W running the
   length of the source in each respective diminsion.
-(2) is an average of the rms from 3 boxes N,S,W but the N and S boxes
   only extend aprox 1/2 length of source (they measure regions located
   to the west of the core).
-All data are West pointing.

From abridle Thu Sep 22 10:18:44 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["537" "Thu" "22" "September" "1994" "10:18:43" "-0400" "Alan Bridle"
"abridle " nil "15" "Re: noise numbers" nil nil nil "9" nil nil (number " " mark "
Alan Bridle   Sep 22   15/537   " thread-indent "\"Re: noise numbers\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA21932; Thu, 22 Sep 1994 10:18:43 -0400
Message-Id: <9409221418.AA21932@polaris.cv.nrao.edu>
References: <9409220007.AA35600@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: noise numbers
Date: Thu, 22 Sep 1994 10:18:43 -0400

Any conclusions?

Any noticeable differences in I images in any other respect?
Rumble, integrated flux, deconvolution success, bowls, etc.?

If neither of the I images suffers from the "<V noise" problem,
does it _matter_ which you use?

Ant significant differences between them when compared with
the L Band data at same resolution -- e.g. spectral index
distributions noticeably different, any more artifacts in
one s.i. image than the other?

If the differences are not noticeable at X and then they probably
will not be at C Band.

```
From abridle Wed Oct  5 17:17:12 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["40140" "Wed" "5" "October" "1994" "17:17:12" "-0400" "Alan Bridle" "abridle
" nil "1032" "3C353 @ NED" nil nil nil "10" nil nil (number " " mark "     Alan
Bridle       Oct  5 1032/40140 " thread-indent "\"3C353 @ NED\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA25147; Wed, 5 Oct 1994 17:17:12 -0400
Message-Id: <9410052117.AA25147@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: 3C353 @ NED
Date: Wed, 5 Oct 1994 17:17:12 -0400


I was in NED getting some other sources and dumped 3C353 segment
again, FYI:


------- Start of forwarded message -------
X-VM-v5-Data: ([nil nil t t nil nil nil nil nil]
      ["38984" "Wed" "5" "October" "1994" "14:13:01" "-0700" "Anonymous Ned user"
"ned@ipac.caltech.edu" nil "1007" "" "^From:" nil nil "10"])
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA35819; Wed, 5 Oct 1994 17:10:52 -0400
Received: from castor.ipac.caltech.edu (castor.caltech.edu) by cv3.cv.nrao.edu
(4.1/DDN-DLB/1.13)
      id AA24423; Wed, 5 Oct 94 17:10:46 EDT
Received: from hepburn.ipac.caltech.edu (hepburn.ipac.caltech.edu [134.4.10.119])
        by castor.ipac.caltech.edu (8.6.8.1/8.6.4)
        with ESMTP id OAA12699
        for <abridle@nrao.edu>; Wed, 5 Oct 1994 14:10:43 -0700
Received: (ned@localhost)
        by hepburn.ipac.caltech.edu (8.6.8.1/8.6.4) id OAA26629
        for abridle@nrao.edu; Wed, 5 Oct 1994 14:13:01 -0700
Message-Id: <199410052113.OAA26629@hepburn.ipac.caltech.edu>
From: Anonymous Ned user <ned@ipac.caltech.edu>
To: abridle@NRAO.EDU
Date: Wed, 5 Oct 1994 14:13:01 -0700

Your search result, Part No. 1 of 1
- ---------------------------------------------------
Mail was requested on Wed Oct  5 14:12:56 1994
Your email address: abridle@nrao.edu

- ---------------------------------------------------------------------
Performing search for object "3C 353" ...
1 object(s) found.
#  Object Name                Equatorial           Type   Dist. No. No.  No.
                            (B1950.0 Equinox)              amin  Ref Note Phot
1    [RC2] A1717+00          17h17m53.3s, -00d55m49s G      0.0   55  2   34

All the names and basic data for Object No.  1.
      Name                      Type
[RC2] A1717+00                    G
3C 353                            RadioS
4C -00.67                         RadioS
PKS 1717-00                       RadioS
PKS B1717-009                     RadioS
```

PKS J1720-0058	RadioS
87GB[BWE91] 1717-0056	RadioS
[WB92] 1717-0056	RadioS
CTA 076	RadioS
DA 434	RadioS
NRAO 0524	RadioS
[KWP81] 1717-00	RadioS

Equatorial (B1950.0)	: 17h17m53.28s ,-00d55m48.7s
Positional Uncertainty (arcsec)	: 2.50E+00 x 2.50E+00
Source of Position	: 1993MNRAS.263..999T
Helio. radial velocity	: 9120 +/- 59 km/s
Source of Redshift or Velocity	: 1991RC3.9.T...0000d
Galactic Extinction (B mag)	: 0.61
Diameters (arcmin)	: 0.6 x 0.4
Magnitude	: 15.36
Morphological Type	: SA0-:

Position reference:
TADHUNTER, C. N., MORGANTI, R., DI SEREGO ALIGHIERI, S.,
FOSBURY, R. A. E., AND DANZIGER, I. J.
OPTICAL SPECTROSCOPY OF A COMPLETE SAMPLE OF SOUTHERN 2-JY RADIO SOURCES
M. N. R. A. S.
1993 vol. 263 p. 999-1022

- ---

Search for photometry data for object "3C 353" ...
34 photometry data point(s) found.

NO.	FREQUENCY_TARGETED	MEASUREMENT		UNC	UNITS	REFERENCE CODE
1	31400 MHz	2.56	+/-	.13	Jy	1981AJ.....83.1306G
2	8400 MHz	8.47			Jy	1990PKS90.C...0000W
3	8000 MHz	15.3	+/-	5.0%	Jy	1971AJ.....76....1S
4	5009 MHz	23.6	+/-	1.04	Jy	1981A&AS...45..367K
5	5000 MHz	22.90			Jy	1990PKS90.C...0000W
6	5000 MHz	21.35	+/-	1.07	Jy	1981A&AS...45..367K
7	5000 MHz	21.48	+/-	.91	Jy	1981A&AS...45..367K
8	4.85 GHz	17499	+/-	15%	mJy	1991ApJS...75....1B
9	2700 MHz	35.57	+/-	1.78	Jy	1981A&AS...45..367K
10	2700 MHz	34.7	+/-	.72	Jy	1971AuJPS..19....1W
11	2700 MHz	36.59	+/-	1.03	Jy	1975AuJPS..38....1W
12	2700 MHz	36.30			Jy	1990PKS90.C...0000W
13	2650 MHz	37.03	+/-	.91	Jy	1975AuJPS..38....1W
14	1410 MHz	58.03	+/-	.96	Jy	1981A&AS...45..367K
15	1410 MHz	54.00			Jy	1990PKS90.C...0000W
16	1400 MHz	56.5	+/-	2.80	Jy	1981A&AS...45..367K
17	1400 MHz	56.98	+/-	1.69	Jy	1981A&AS...45..367K
18	1.40 GHz 57110	mJy		1992ApJS...79..331W		
19	960 MHz	80.4	+/-	.63	Jy	1981A&AS...45..367K
20	750 MHz	93.64	+/-	.64	Jy	1981A&AS...45..367K
21	750 MHz	88.4	+/-	4.40	Jy	1981A&AS...45..367K
22	635 MHz	108.64	+/-	1.56	Jy	1981A&AS...45..367K
23	635 MHz	97.00			Jy	1990PKS90.C...0000W
24	580 MHz	114.61	+/-	2.60	Jy	1981A&AS...45..367K
25	468 MHz	101.05	+/-	5.12	Jy	1981A&AS...45..367K
26	408 MHz	114.5	+/-	18.18	Jy	1969AuJPS...7....1E

27	408 MHz	138.0		Jy	1990PKS90.C...0000W
28	318 MHz	160.7	+/- 6.60	Jy	1981A&AS...45..367K
29	178 MHz	241.57	+/- 12.40	Jy	1981A&AS...45..367K
30	178 MHz	220.0		Jy	1990PKS90.C...0000W
31	160 MHz	273.5	+/- 35.60	Jy	1981A&AS...45..367K
32	80 MHz	349.0		Jy	1990PKS90.C...0000W
33	80 MHz	371	+/- 52.00	Jy	1981A&AS...45..367K
34	38 MHz	776.45	+/- 35.00	Jy	1981A&AS...45..367K

More for photometric data point 1:
Reference code : 1981AJ.....83.1306G
Freq. targeted : 31400 MHz
Measurement : 2.56 Jy =2.56E-26 W m^-2^ Hz^-1^
Uncertainty : .13 =1.30E-27
Significance : uncertainty
Freq or Wave. : 31400 MHz (OBS)=3.14E+10 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60 -005554.0 (B1950)
Spatial mode : Not reported in paper;
Qualifiers : From Kuhr catalog (1981A&AS...45..367K)
Transformed from previously published data;

More for photometric data point 2:
Reference code : 1990PKS90.C...0000W
Freq. targeted : 8400 MHz
Measurement : 8.47 Jy =8.47E-26 W m^-2^ Hz^-1^
Uncertainty : =0.00E+00
Significance : no unc. reported
Freq or Wave. : 8400 MHz (OBS)=8.40E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 17 17 55.6 -00 55 41 (B1950)
Spatial mode : Integrated from scans;
Qualifiers :
Homogeneized from new and previously published data;

More for photometric data point 3:
Reference code : 1971AJ.....76....1S
Freq. targeted : 8000 MHz
Measurement : 15.3 Jy =1.53E-25 W m^-2^ Hz^-1^
Uncertainty : 5.0% =7.65E-27
Significance : no unc. reported
Freq or Wave. : 8000 MHz (OBS)=8.00E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted:
Spatial mode : Integrated from scans;
Qualifiers :
From new raw data;

More for photometric data point 4:
Reference code : 1981A&AS...45..367K
Freq. targeted : 5009 MHz
Measurement : 23.6 Jy =2.36E-25 W m^-2^ Hz^-1^
Uncertainty : 1.04 =1.04E-26
Significance : uncertainty
Freq or Wave. : 5009 MHz (OBS)=5.01E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60 -005554.0 (B1950)
Spatial mode : Not reported in paper;
Qualifiers : Recal. to Baars scale by factor of 1.03

Recalibrated data;

More for photometric data point 5:
Reference code : 1990PKS90.C...0000W
Freq. targeted : 5000 MHz
Measurement : 22.90 Jy =2.29E-25 W m^-2^ Hz^-1^
Uncertainty : =0.00E+00
Significance : no unc. reported
Freq or Wave. : 5000 MHz (OBS)=5.00E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 17 17 55.6 -00 55 41 (B1950)
Spatial mode : Integrated from scans;
Qualifiers :
Homogeneized from new and previously published data;

More for photometric data point 6:
Reference code : 1981A&AS...45..367K
Freq. targeted : 5000 MHz
Measurement : 21.35 Jy =2.13E-25 W m^-2^ Hz^-1^
Uncertainty : 1.07 =1.07E-26
Significance : uncertainty
Freq or Wave. : 5000 MHz (OBS)=5.00E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60 -005554.0 (B1950)
Spatial mode : Not reported in paper;
Qualifiers : Recal. to Baars scale by factor of 0.993
Recalibrated data;

More for photometric data point 7:
Reference code : 1981A&AS...45..367K
Freq. targeted : 5000 MHz
Measurement : 21.48 Jy =2.15E-25 W m^-2^ Hz^-1^
Uncertainty : .91 =9.10E-27
Significance : uncertainty
Freq or Wave. : 5000 MHz (OBS)=5.00E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60 -005554.0 (B1950)
Spatial mode : Not reported in paper;
Qualifiers : Recal. to Baars scale by factor of 0.979
Recalibrated data;

More for photometric data point 8:
Reference code : 1991ApJS...75....1B
Freq. targeted : 4.85 GHz
Measurement : 17499 mJy =1.75E-25 W m^-2^ Hz^-1^
Uncertainty : 15% =2.62E-26
Significance : uncertainty
Freq or Wave. : 4.85 GHz (OBS)=4.85E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171754.9 -005600 (B1950)
Spatial mode : Peak flux;
Qualifiers :
From new raw data; Corrected for contaminating sources;

More for photometric data point 9:
Reference code : 1981A&AS...45..367K
Freq. targeted : 2700 MHz
Measurement : 35.57 Jy =3.56E-25 W m^-2^ Hz^-1^
Uncertainty : 1.78 =1.78E-26

```
Significance   : uncertainty
Freq or Wave.  :     2700     MHz          (OBS   )=2.70E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.022
                 Recalibrated data;

More for photometric data point 10:
Reference code : 1971AuJPS..19....1W
Freq. targeted : 2700 MHz
Measurement    :  34.7        Jy                   =3.47E-25 W m^-2^ Hz^-1^
Uncertainty    :   .72                             =7.20E-27
Significance   : uncertainty
Freq or Wave.  :     2700     MHz          (OBS   )=2.70E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : From Kuhr catalog (1981A&AS...45..367K)
                 Transformed from previously published data;

More for photometric data point 11:
Reference code : 1975AuJPS..38....1W
Freq. targeted : 2700 MHz
Measurement    :  36.59       Jy                   =3.66E-25 W m^-2^ Hz^-1^
Uncertainty    :  1.03                             =1.03E-26
Significance   : uncertainty
Freq or Wave.  :     2700     MHz          (OBS   )=2.70E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : From Kuhr catalog (1981A&AS...45..367K)
                 Transformed from previously published data;

More for photometric data point 12:
Reference code : 1990PKS90.C...0000W
Freq. targeted : 2700 MHz
Measurement    :  36.30       Jy                   =3.63E-25 W m^-2^ Hz^-1^
Uncertainty    :                                   =0.00E+00
Significance   : no unc. reported
Freq or Wave.  :     2700     MHz          (OBS   )=2.70E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 17 17 55.6      -00 55 41 (B1950)
Spatial mode   : Integrated from scans;
Qualifiers     :
                 Homogeneized from new and previously published data;

More for photometric data point 13:
Reference code : 1975AuJPS..38....1W
Freq. targeted : 2650 MHz
Measurement    :  37.03       Jy                   =3.70E-25 W m^-2^ Hz^-1^
Uncertainty    :   .91                             =9.10E-27
Significance   : uncertainty
Freq or Wave.  :     2650     MHz          (OBS   )=2.65E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : From Kuhr catalog (1981A&AS...45..367K)
                 Transformed from previously published data;
```

More for photometric data point 14:
Reference code : 1981A&AS...45..367K
Freq. targeted : 1410 MHz
Measurement : 58.03 Jy =5.80E-25 W m^-2^ Hz^-1^
Uncertainty : .96 =9.60E-27
Significance : uncertainty
Freq or Wave. : 1410 MHz (OBS)=1.41E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60 -005554.0 (B1950)
Spatial mode : Not reported in paper;
Qualifiers : Recal. to Baars scale by factor of 1.017
Recalibrated data;

More for photometric data point 15:
Reference code : 1990PKS90.C...0000W
Freq. targeted : 1410 MHz
Measurement : 54.00 Jy =5.40E-25 W m^-2^ Hz^-1^
Uncertainty : =0.00E+00
Significance : no unc. reported
Freq or Wave. : 1410 MHz (OBS)=1.41E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 17 17 55.6 -00
55 41 (B1950)
Spatial mode : Integrated from scans;
Qualifiers :
Homogeneized from new and previously published data;

More for photometric data point 16:
Reference code : 1981A&AS...45..367K
Freq. targeted : 1400 MHz
Measurement : 56.5 Jy =5.65E-25 W m^-2^ Hz^-1^
Uncertainty : 2.80 =2.80E-26
Significance : uncertainty
Freq or Wave. : 1400 MHz (OBS)=1.40E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60 -005554.0 (B1950)
Spatial mode : Not reported in paper;
Qualifiers : Recal. to Baars scale by factor of 1.029
Recalibrated data;

More for photometric data point 17:
Reference code : 1981A&AS...45..367K
Freq. targeted : 1400 MHz
Measurement : 56.98 Jy =5.70E-25 W m^-2^ Hz^-1^
Uncertainty : 1.69 =1.69E-26
Significance : uncertainty
Freq or Wave. : 1400 MHz (OBS)=1.40E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60 -005554.0 (B1950)
Spatial mode : Not reported in paper;
Qualifiers : Recal. to Baars scale by factor of 1.029
Recalibrated data;

More for photometric data point 18:
Reference code : 1992ApJS...79..331W
Freq. targeted : 1.40 GHz
Measurement : 57110 mJy =5.71E-25 W m^-2^ Hz^-1^
Uncertainty : =0.00E+00

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Significance   : no unc. reported
Freq or Wave.  : 1.4          GHz          (OBS   )=1.40E+09 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171754.9        -005600 (B1950)
Spatial mode   : Peak flux;
Qualifiers     :
                 From new raw data;

More for photometric data point 19:
Reference code : 1981A&AS...45..367K
Freq. targeted : 960 MHz
Measurement    :  80.4        Jy                   =8.04E-25 W m^-2^ Hz^-1^
Uncertainty    :   .63                             =6.30E-27
Significance   : uncertainty
Freq or Wave.  :      960     MHz          (OBS   )=9.60E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.029
                 Recalibrated data;

More for photometric data point 20:
Reference code : 1981A&AS...45..367K
Freq. targeted : 750 MHz
Measurement    :  93.64       Jy                   =9.36E-25 W m^-2^ Hz^-1^
Uncertainty    :   .64                             =6.40E-27
Significance   : uncertainty
Freq or Wave.  :      750     MHz          (OBS   )=7.50E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.059
                 Recalibrated data;

More for photometric data point 21:
Reference code : 1981A&AS...45..367K
Freq. targeted : 750 MHz
Measurement    :  88.4        Jy                   =8.84E-25 W m^-2^ Hz^-1^
Uncertainty    :  4.40                             =4.40E-26
Significance   : uncertainty
Freq or Wave.  :      750     MHz          (OBS   )=7.50E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.046
                 Recalibrated data;

More for photometric data point 22:
Reference code : 1981A&AS...45..367K
Freq. targeted : 635 MHz
Measurement    :  108.64      Jy                   =1.09E-24 W m^-2^ Hz^-1^
Uncertainty    :  1.56                             =1.56E-26
Significance   : uncertainty
Freq or Wave.  :      635     MHz          (OBS   )=6.35E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.035
                 Recalibrated data;
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More for photometric data point 23:
Reference code : 1990PKS90.C...0000W
Freq. targeted : 635 MHz
Measurement    :  97.00       Jy                  =9.70E-25 W m^-2^ Hz^-1^
Uncertainty    :                                  =0.00E+00
Significance   : no unc. reported
Freq or Wave.  :      635     MHz          (OBS   )=6.35E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 17 17 55.6      -00 55 41 (B1950)
Spatial mode   : Integrated from scans;
Qualifiers     :
                 Homogeneized from new and previously published data;

More for photometric data point 24:
Reference code : 1981A&AS...45..367K
Freq. targeted : 580 MHz
Measurement    :  114.61      Jy                  =1.15E-24 W m^-2^ Hz^-1^
Uncertainty    :  2.60                            =2.60E-26
Significance   : uncertainty
Freq or Wave.  :      580     MHz          (OBS   )=5.80E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.041
                 Recalibrated data;

More for photometric data point 25:
Reference code : 1981A&AS...45..367K
Freq. targeted : 468 MHz
Measurement    :  101.05      Jy                  =1.01E-24 W m^-2^ Hz^-1^
Uncertainty    :  5.12                            =5.12E-26
Significance   : uncertainty
Freq or Wave.  :      468     MHz          (OBS   )=4.68E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.045
                 Recalibrated data;

More for photometric data point 26:
Reference code : 1969AuJPS...7....1E
Freq. targeted : 408 MHz
Measurement    :  114.5       Jy                  =1.15E-24 W m^-2^ Hz^-1^
Uncertainty    : 18.18                            =1.82E-25
Significance   : uncertainty
Freq or Wave.  :      408     MHz          (OBS   )=4.08E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : From Kuhr catalog (1981A&AS...45..367K)
                 Transformed from previously published data;

More for photometric data point 27:
Reference code : 1990PKS90.C...0000W
Freq. targeted : 408 MHz
Measurement    :  138.0       Jy                  =1.38E-24 W m^-2^ Hz^-1^
Uncertainty    :                                  =0.00E+00
Significance   : no unc. reported
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Freq or Wave.  :      408     MHz          (OBS   )=4.08E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 17 17 55.6      -00 55 41 (B1950)
Spatial mode   : Integrated from scans;
Qualifiers     :
                 Homogeneized from new and previously published data;

More for photometric data point 28:
Reference code : 1981A&AS...45..367K
Freq. targeted : 318 MHz
Measurement    :  160.7       Jy                   =1.61E-24 W m^-2^ Hz^-1^
Uncertainty    :  6.60                             =6.60E-26
Significance   : uncertainty
Freq or Wave.  :      318     MHz          (OBS   )=3.18E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.05
                 Recalibrated data;

More for photometric data point 29:
Reference code : 1981A&AS...45..367K
Freq. targeted : 178 MHz
Measurement    :  241.57      Jy                   =2.42E-24 W m^-2^ Hz^-1^
Uncertainty    : 12.40                             =1.24E-25
Significance   : uncertainty
Freq or Wave.  :      178     MHz          (OBS   )=1.78E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.19
                 Recalibrated data;

More for photometric data point 30:
Reference code : 1990PKS90.C...0000W
Freq. targeted : 178 MHz
Measurement    :  220.0       Jy                   =2.20E-24 W m^-2^ Hz^-1^
Uncertainty    :                                   =0.00E+00
Significance   : no unc. reported
Freq or Wave.  :      178     MHz          (OBS   )=1.78E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 17 17 55.6      -00 55 41 (B1950)
Spatial mode   : Integrated from scans;
Qualifiers     :
                 Homogeneized from new and previously published data;

More for photometric data point 31:
Reference code : 1981A&AS...45..367K
Freq. targeted : 160 MHz
Measurement    :  273.5       Jy                   =2.74E-24 W m^-2^ Hz^-1^
Uncertainty    : 35.60                             =3.56E-25
Significance   : uncertainty
Freq or Wave.  :      160     MHz          (OBS   )=1.60E+08 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60       -005554.0 (B1950)
Spatial mode   : Not reported in paper;
Qualifiers     : Recal. to Baars scale by factor of 1.11
                 Recalibrated data;
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More for photometric data point 32:
Reference code : 1990PKS90.C...0000W
Freq. targeted : 80 MHz
Measurement : 349.0 Jy =3.49E-24 W m^-2^ Hz^-1^
Uncertainty : =0.00E+00
Significance : no unc. reported
Freq or Wave. : 80 MHz (OBS)=8.00E+07 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 17 17 55.6 -00 55 41 (B1950)
Spatial mode : Integrated from scans;
Qualifiers :

Homogeneized from new and previously published data;

More for photometric data point 33:
Reference code : 1981A&AS...45..367K
Freq. targeted : 80 MHz
Measurement : 371 Jy =3.71E-24 W m^-2^ Hz^-1^
Uncertainty : 52.00 =5.20E-25
Significance : uncertainty
Freq or Wave. : 80 MHz (OBS)=8.00E+07 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60 -005554.0 (B1950)
Spatial mode : Not reported in paper;
Qualifiers : Recal. to Baars scale by factor of 1.074
Recalibrated data;

More for photometric data point 34:
Reference code : 1981A&AS...45..367K
Freq. targeted : 38 MHz
Measurement : 776.45 Jy =7.76E-24 W m^-2^ Hz^-1^
Uncertainty : 35.00 =3.50E-25
Significance : uncertainty
Freq or Wave. : 38 MHz (OBS)=3.80E+07 Hz
Frequency mode : broad-band measurement;
Coord. targeted: 171755.60 -005554.0 (B1950)
Spatial mode : Not reported in paper;
Qualifiers : Recal. to Baars scale by factor of 1.09
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IDENTIFICATION OF STRONG EXTRAGALACTIC RADIO SOURCES IN THE DECLINATION ZONE 0^DEG^ TO -20^DEG^

Reference No. 54 of 55: 1966ApJ...144..459W
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1966 vol. 144 p. 459-482
WYNDHAM, J. D.
OPTICAL IDENTIFICATION OF RADIO SOURCES IN THE 3C REVISED CATALOGUE

Reference No. 55 of 55: 1965ApJ...141....1S
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1965 vol. 141 p. 1
SCHMIDT, M.
OPTICAL SPECTRA AND REDSHIFTS OF 31 RADIO GALAXIES

- ----------

ABOUT THE DATA 2OCT92

Much care has gone into the collection of POSITIONS into NED, and they are carried along with uncertainties and references to their origin. These positions are continually over-written by more accurate values as such become available.

The "basic data" however are indicative values only, in the sense that they originate in many different sources, and have not been placed on a uniform scale. The main sources are catalogs and compilations, with the more accurate data sets favored, and the larger ones favored at

comparable accuracy. No information is kept about the origin of "basic data".

More controlled and rigorous data collection is applied to PHOTOMETRIC DATA, a NED function introduced in July of 1992. These measurements are carried along with their uncertainties, references to their origin, and some information about the data collection and processing behind them. Unlike positions or basic data, PHOTOMETRIC DATA are never erased or updated, but should serve as a cumulative record of the measurements on each object. As a future enhancement to NED, additional data frames along the same lines will be introduced for positions, kinematics, classifications and other parameters.

**** ACKNOWLEDGING NED ****
(Version Date: 30 Dec 1992)

(1) If your research benefits from the use of the NED database the following acknowledgement would be appreciated:

THIS RESEARCH HAS MADE USE OF THE NASA/IPAC EXTRAGALACTIC DATABASE (NED) WHICH IS OPERATED BY THE JET PROPULSION LABORATORY, CALTECH, UNDER CONTRACT WITH THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

(2) When citing NED within a paper the following statement may be inserted in the form of a footnote:

THE NASA/IPAC EXTRAGALACTIC DATABASE (NED) IS OPERATED BY THE JET PROPULSION LABORATORY, CALIFORNIA INSTITUTE OF TECHNOLOGY, UNDER CONTRACT WITH THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

(3) The most recent article describing NED may be found in:

{The NASA/IPAC Extragalactic Database} (G. Helou, B.F. Madore, M. Schmitz, M.D. Bicay, X. Wu & J. Bennett), 1991, in {Databases and On-Line Data in Astronomy}, ed. D. Egret & M. Albrecht (Dordrecht: Kluwer), p. 89

(4) We would also appreciate receiving a preprint or reprint of any publication acknowledging NED.

N.E.D.
IPAC 100-22
Caltech
PASADENA, CA 91125

- ----------
------- End of forwarded message -------

From abridle Mon Oct 17 17:59:48 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["109" "Mon" "17" "October" "1994" "17:59:48" "-0400" "Alan Bridle" "abridle
" nil "5" "NRL letter" nil nil nil "10" nil nil (number " " mark "   Alan Bridle
Oct 17   5/109   " thread-indent "\"NRL letter\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA34463; Mon, 17 Oct 1994 17:59:48 -0400
Message-Id: <9410172159.AA34463@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: NRL letter
Date: Mon, 17 Oct 1994 17:59:48 -0400

is written. let me know when you're sending your package and I'll
make sure mine follows it by ~24 hrs.

A.

```
From root Fri Oct 28 10:07:34 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["2940" "Fri" "28" "October" "1994" "10:07:33" "-0400" "AIPS user"
"aips@ringtail.cv.nrao.edu " nil "129" "" nil nil nil "10" nil nil (number " " mark
"     AIPS user         Oct 28  129/2940  " thread-indent "\"\"\n") nil]
      nil)
Received: from ringtail.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA23419; Fri, 28 Oct 1994 10:07:34 -0400
Received: by ringtail.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA37676; Fri, 28 Oct 1994 10:07:33 -0400
Message-Id: <9410281407.AA37676@ringtail.cv.nrao.edu>
From: aips@ringtail.cv.nrao.edu (AIPS user)
To: abridle@ringtail.cv.nrao.edu
Date: Fri, 28 Oct 1994 10:07:33 -0400

$ Runfile to define all procedures and adverbs called in MR_353
$
proc dadverbs
scalar udi, uvinseq, uvdi, uscrdi, useq, uflux1, uflux2, AVG
scalar vtniter, utniter, vnoise, ura, udec, zlcor, ccnum
array ubdi(10), utpr(2), urng(2), keyval1(2), keyval2(2)
string*12 uvinna, uvincls, una
finish
$
$================================================================
$ definitio of zlc1p3
$This procedure averages the mean fluxes of 12 small regions placed
$around the perimiter of 3C353 imaged at 3" resolution on a 2K x 2K
$grid, cellsize .32", w/ core at 1024.72 1026.16, RA 17 17 53.276
$DEC -00 55 49.13.  Boxes were chosen based on 3" 1385 MHz image.
$
PROC DZLC1P3
SCALAR SUM,AVG,VARITER,VAR1,VARIENCE,SIGMA,SUM1,SUM2,SUM3,SUM4,SUM5
SCALAR SUM6,SUM7,SUM8,SUM9,SUM10,SUM11,SUM12
FINISH
$
PROC ZLC1P3
SUM=0; AVG=0; VARITER=0; VAR1=0; VARIENCE=0; SIGMA=0; SUM1=0; SUM2=0
SUM3=0; SUM4=0; SUM5=0; SUM6=0; SUM7=0; SUM8=0; SUM9=0; SUM10=0
SUM11=0; SUM12=0
$---East
BLC 519.00  969.00
TRC 539.00 1028.00
IMSTAT
SUM1 = PIXAVG
SUM = SUM + PIXAVG
$
BLC 598.00 1159.00
TRC 615.00 1178.00
IMSTAT
SUM2 = PIXAVG
SUM = SUM + PIXAVG
$
BLC 694.00 1290.00
TRC 730.00 1316.00
IMSTAT
SUM3 = PIXAVG
SUM = SUM + PIXAVG
$---North
```

```
BLC 894.00 1346.00
TRC 966.00 1368.00
IMSTAT
SUM4 = PIXAVG
SUM = SUM + PIXAVG
$
BLC 1109.00 1246.00
TRC 1131.00 1266.00
IMSTAT
SUM5 = PIXAVG
SUM = SUM + PIXAVG
$
BLC 1271.00 1079.00
TRC 1318.00 1155.00
IMSTAT
SUM6 = PIXAVG
SUM = SUM + PIXAVG
$---West
BLC 1487.00  945.00
TRC 1516.00 1040.00
IMSTAT
SUM7 = PIXAVG
SUM = SUM + PIXAVG
$
BLC 1392.00  868.00
TRC 1427.00  890.00
IMSTAT
SUM8 = PIXAVG
SUM = SUM + PIXAVG
$
BLC 1130.00  801.00
TRC 1291.00  829.00
IMSTAT
SUM9 = PIXAVG
SUM = SUM + PIXAVG
$---South
BLC 938.00  781.00
TRC 1105.00  801.00
IMSTAT
SUM10 = PIXAVG
SUM = SUM + PIXAVG
$
BLC 697.00  799.00
TRC 762.00  817.00
IMSTAT
SUM11 = PIXAVG
SUM = SUM + PIXAVG
$
BLC 595.00  868.00
TRC 615.00  884.00
IMSTAT
SUM12 = PIXAVG
SUM = SUM + PIXAVG
$
AVG = SUM/12
    VARITER = (SUM1 - AVG)*(SUM1 - AVG)
    VAR1 = VAR1 + VARITER
    VARITER = (SUM2 - AVG)*(SUM2 - AVG)
    VAR1 = VAR1 + VARITER
```

```
    VARITER = (SUM3 - AVG)*(SUM3 - AVG)
    VAR1 = VAR1 + VARITER
    VARITER = (SUM4 - AVG)*(SUM4 - AVG)
    VAR1 = VAR1 + VARITER
    VARITER = (SUM5 - AVG)*(SUM5 - AVG)
    VAR1 = VAR1 + VARITER
    VARITER = (SUM6 - AVG)*(SUM6 - AVG)
    VAR1 = VAR1 + VARITER
    VARITER = (SUM7 - AVG)*(SUM7 - AVG)
    VAR1 = VAR1 + VARITER
    VARITER = (SUM8 - AVG)*(SUM8 - AVG)
    VAR1 = VAR1 + VARITER
    VARITER = (SUM9 - AVG)*(SUM9 - AVG)
    VAR1 = VAR1 + VARITER
    VARITER = (SUM10 - AVG)*(SUM10 - AVG)
    VAR1 = VAR1 + VARITER
    VARITER = (SUM11 - AVG)*(SUM11 - AVG)
    VAR1 = VAR1 + VARITER

    VARITER = (SUM12 - AVG)*(SUM12 - AVG)
    VAR1 = VAR1 + VARITER
VARIENCE = VAR1/(11)
SIGMA = SQRT(VARIENCE)
TYPE '*******************************************'
TYPE 'Average zero-level off-set =',AVG
TYPE 'Sigma =', SIGMA
FINISH

From root Fri Oct 28 10:07:44 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["14684" "Fri" "28" "October" "1994" "10:07:43" "-0400" "AIPS user"
"aips@ringtail.cv.nrao.edu " nil "473" "" nil nil nil "10" nil nil (number " " mark
"     AIPS user         Oct 28  473/14684 " thread-indent "\"\"\n") nil]
      nil)
Received: from ringtail.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA40064; Fri, 28 Oct 1994 10:07:43 -0400
Received: by ringtail.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA12847; Fri, 28 Oct 1994 10:07:43 -0400
Message-Id: <9410281407.AA12847@ringtail.cv.nrao.edu>
From: aips@ringtail.cv.nrao.edu (AIPS user)
To: abridle@ringtail.cv.nrao.edu
Date: Fri, 28 Oct 1994 10:07:43 -0400

$This procedure is an attempt to automate production of 3C353 composit
$deconvolved, "final" images.  The steps it does are commented in.
$1)  initial hot-spot and core clean removal, make dirty beams for VTESS
$2)  vtess deconvolution
$3)  rstor clean components from steps (1&2) to VTC image
$4)  zero level measure, zero level correction
$5)  primary beam correction
$6)  puthead to align core to standard frame
$7)  hgeom to grid image to standard frame
$8)  subim result of (10) to standard size
$
$udi  output file disk
$ubdi  baddisks
$uvinna  uv file name
$uvincls uv file class
$uvinseq uvfile seq
```

```
$uvdi  disk w/ uvdata
$uscrdi  scratch disk
$una  name for files from automated imaging process
$useq  the seq # used during automated sequence
$ura  rashift
$udec  decshift
$utpr  uvtaper
$urng1  inner uvrange
$urng2  outer uvrange
$uflux1  flux level to clean to for lobes and core
$uflux2  flux leve to further clean core too
$vtniter vtess niter
$utniter utess niter
$vnoise  vmap noise (used as noise in VT&UT)
$keyval1 RA ref pix shift
$keyval2 DEC ref pix shitt
$
$=============================================================$
$         Asign values to adverbs and inputs                  $
$=============================================================$
udi 3
ubdi 0
uvinna '353-W-X-ABCD'
uvincls 'FNLXSC'
uvinseq 1
uvdi 1
uscrdi 4
una 'X_1.3-T'
useq 1
ura 61.5368
udec 2.376
utpr 165,100
urng  .75, 204
uflux1 .007
uflux2 .001
vtniter 25
utniter 20
vnoise  7.32E-5
keyval1 0
keyval2 0
save 'mr_353_inputs'
$
$
$************************************************$
$                  "Program" part                 $
$************************************************$
$
$
$================================================$
$   pre-clean I, dirty QU images and IQU beams #1  $
$================================================$
get 'mr_353_inputs'
     task 'mx'
          INNAME     uvinna
          INCLASS    uvincls
          INSEQ      uvinseq
          INDISK     uvdi
          IN2NAME    una
          IN2CLASS   'uvwork'
```

```
          IN2SEQ        0
          IN2DISK    uscrdi
          BCHAN         1
          ECHAN         0
          CHANNEL       0
          NPOINTS       1
          CHINC         1
          STOKES     'I   '
          BIF           1
          EIF           2
          OUTNAME    una
          OUTDISK    udi
          OUTSEQ     useq
          CELLSIZE       .32         .32
          IMSIZE     2048        2048
          NFIELD        1
          FLDSIZE       0
          RASHIFT    ura
          DECSHIFT   udec
          NBOXES        3
          box(1,1) 1017.00
          box(2,1) 1019.00
          box(3,1) 1033.00
          box(4,1) 1032.00
          box(1,2)  640.00
          box(2,2)  935.00
          box(3,2)  815.00
          box(4,2) 1130.00
          box(1,3) 1378.00
          box(2,3)  930.00
          box(3,3) 1443.00
          box(4,3) 1042.00
          UVTAPER    utpr
          UVRANGE    urng
          UVWTFN     '  '
          UVBOX         0
          ZEROSP        0
          XTYPE         5
          YTYPE         5
          XPARM         0
          YPARM         0
          GAIN           .001
          FLUX          uflux1
          MINPATCH   1024
          NITER    100000
          BCOMP         0
          BMAJ         -1
          BMIN          1.3
          BPA           0
          PHAT          0
          FACTOR        -.5
          DOTV         -1
          CMETHOD    '    '
          GUARD        -1,-1
          MAXPIXEL      0
          BADDISK    ubdi
go mx                     $clean hot-spots and core
     wait mx
     indi udi
```

```
     inna una
     inclass 'icln'
     inseq useq
     keyword 'niter'
geth                        $find number of cc for restart
     tget mx
     niter 100000
     bcomp keyvalue(1)
     nboxes 1
     flux = uflux2
go mx                       $clean core some more
     wait mx
          get 'mr_353_inputs'
          inna una
          inclass 'icln'
          inseq useq
          indi udi
          outna una
          outclass 'vticln'
          outseq useq
          outdi udi
go rename                   $rename icln to vticln
          inna una
          inclass 'ibeam'
          inseq useq
          indi udi
          intype 'ma'
zap                         $zap old ibem
     recat
     tget mx
          niter 0
          bcomp 0
go mx                       $make dirty ibeam for VT
     wait mx
          inna una
          inclass 'ibeam'
          inseq useq
          indi udi
          outna una
          outclass 'vtibem'
          outseq useq
          outdi udi
go rename                   $rename ibeam to vtibem
     tget mx
          stokes 'q'
$go mx                       $make dirty Q map and beam
     wait mx
          stokes 'u'
$go mx                       $make dirty U map and beam
     wait mx
$================================================$
$              VT and UT deconvolution            $
$================================================$
get 'mr_353_inputs'
     task 'vtess'
          INNAME     una
          INCLASS    'VTICLN'
          INSEQ      useq
          INDISK     udi
```

```
          IN2NAME    una
          IN2CLASS   'VTIBEM'
          IN2SEQ     useq
          IN2DISK    udi
          IN3NAME    '            '
          IN3CLASS   '      '
          IN3SEQ        0
          IN3DISK    uscrdi
          OUTNAME    una
          OUTCLASS   'VT    '
          OUTSEQ     useq
          OUTDISK    udi
          OUT2NAME   una
          OUT2CLAS   'VTC   '
          OUT2SEQ    useq
          OUT2DISK   udi
          NMAPS         1
          NITER      vtniter
          NOISE      vnoise
          FLUX          0
          BLC           0
          TRC           0
          DOTV         -1
          PRTLEV        1
          PBSIZE        0
          BMAJ          1.3
          BMIN          1.3
          BPA           0
          BADDISK    ubdi
go vtess                  $stokes I MEM
     wait vtess
     recat
     tget vtess
     task 'utess'
          inclass 'qmap'
          in2class 'qbeam'
          outclass 'qt'
          out2clas 'qtc'
$go utess                  $stokes Q MEM
     wait utess
$     recat
     tget utess
          inclass 'umap'
          in2class 'ubeam'
          outclass 'ut'
          out2clas 'utc'
$go utess                  $stokes U MEM
     wait utess
$     recat
$================================================$
$        restor pre-cleaned cc to VTC image        $
$================================================$
get 'mr_353_inputs'
          inna una
          inclass 'vticln'
          inseq useq
          indi udi
          keyword 'niter'
geth                      $determine number of cc to rstor
```

```
     task 'rstor'
          niter = keyvalue(1)
          INNAME     una
          INCLASS    'VTC   '
          INSEQ      useq
          INDISK     udi
          BLC           0
          IN2NAME    una
          IN2CLASS   'VTICLN'
          IN2SEQ     useq
          IN2DISK    udi
          INVERS        0
          OUTNAME    una
          OUTCLASS   'RSTOR '
          OUTSEQ     useq
          OUTDISK    udi
          $NITER      ccnum
          BMAJ          1.3
          BMIN          1.3
          BPA           0
          BADDISK    ubdi
     type 'restoring',niter,' clean comp.'
go rstor                  $rstor clean comp.
     wait rstor
$================================================$
$     determine and apply zero level correction    $
$================================================$
$get 'mr_353_inputs'
          inname una
          inclass 'rstor'
          inseq useq
          indi udi
zlc1p3                    $determine zerl level correction
     type avg
     aparm(3) = -avg
     type aparm(3)
     task 'comb'
          INNAME     una

        INCLASS    'rstor'
          INSEQ      useq
          INDISK     udi
          IN2NAME    una
          IN2CLASS   'rstor'
          IN2SEQ     useq
          IN2DISK    udi
          DOALIGN       1
          OUTNAME    una
          OUTCLASS   'ZLCRST'
          OUTSEQ     useq
          OUTDISK    udi
          BLC           0
          TRC           0
          OPCODE 'sum'
          aparm 0
          APARM(1)  1
          aparm(2)  1E-30
          BPARM         0
          opcode 'sum'
```

```
          aparm(3) = -avg
     type 'Adding', aparm(3), 'to im to correct zero level offset.'
go comb                   $apply zero level correction
     wait comb
$================================================$
$          apply primary beam correction          $
$================================================$
get 'mr_353_inputs'
     task 'pbcor'
          USERID        0
          INNAME     una
          INCLASS    'ZLCRST'
          INSEQ      useq
          INDISK     udi
          BLC           0
          TRC           0
          OUTNAME    una
          OUTCLASS   'PBCZLC'
          OUTSEQ     useq
          OUTDISK    udi
          DPARM         0
          GPOS          0
go pbcor                    $pbcor I image
     wait pbcor
     tget pbcor
          inclass 'qtc'
          outclass 'pbcqtc'
$go pbcor                   $pbcor Q image
     wait pbcor
          inclass 'utc'
          outclass 'pbcutc'
$go pbcor                   $pbcor U image
     wait pbcor
$================================================$
$         puthead to set IQU image RA&DEC         $
$================================================$
get 'mr_353_inputs'
     task 'subim'
           USERID        0
           INNAME     una
           INCLASS    'PBCZLC'
           INSEQ      useq
           INDISK     udi
           OUTNAME    una
           OUTCLASS   'pthpbi'
           OUTSEQ     useq
           OUTDISK    udi
           BLC           0
           TRC           0
           XINC          1
           YINC          1
           OPCODE     '    '
go subim                    $copy I image
     wait subim
     tget subim
          inclass 'pbcqvt'
          outclass 'pthpbq'
$go subim                   $copy Q image
     wait subim
```

```
     tget subim
          inclass 'pbcuvt'
          outclass 'pthpbu'
$go subim                  $copy U image
     wait subim
     task 'puth'
          inna una
          inclass 'pthpbi'
          inseq useq
          indi udi
          keyword 'CRPIX1'
          keyvalue keyval1
puthead                   $puthead I RA
          keyword 'CRPIX2'
          keyvalue keyval2
puthead                   $puthead I DEC
          pixxy 1025,1025
maxfit                    $check
     type 'should be: '
          inclass 'pthpbq'
          inseq useq
          indi udi
          keyword 'CRPIX1'
          keyvalue keyval1
$puthead                   $puthead Q RA
          keyword 'CRPIX2'
          keyvalue keyval2
$puthead                   $puthead Q DEC
          inclass 'pthpbu'
          inseq useq
          indi udi
          keyword 'CRPIX1'
          keyvalue keyval1
$puthead                   $puthead U RA
          keyword 'CRPIX2'
          keyvalue keyval2
$puthead                   $puthead U DEC
$================================================$
$        hgeom IQU images onto same grid          $
$================================================$
get 'mr_353_inputs'
     task 'hgeom'
          INNAME     una
          INCLASS    'pthpbi'
          INSEQ      useq
          INDISK     udi
          IN2NAME    '353W-X/L2   '
          IN2CLASS   'ZLCRST'
          IN2SEQ        2
          IN2DISK       3
          OUTNAME    una
          OUTCLASS   'hgmphi'
          OUTSEQ     useq
          OUTDISK    udi
          BLC           0
          TRC           0
          IMSIZE        0           0
          APARM         0           1
go hgeom                $grid I image
```

```
     wait hgeom
     tget hgeom
          inclass 'pthpbq'
          outclass 'hgmphq'
$go hgeom                $grid Q image
     wait hgeom
     tget hgeom
          inclass 'pthpbu'
          outclass 'hgmphu'
$go hgeom                $grid U image
     wait hgeom
$===================================================$
$             subim final IQU images                $
$===================================================$
get 'mr_353_inputs'
     task 'subim'
          USERID        0
          INNAME     una
          INCLASS    'hgmphi'
          INSEQ      useq
          INDISK     udi
          OUTNAME    una
          OUTCLASS   'SBMH_I'
          OUTSEQ     useq
          OUTDISK    udi
          BLC         536         794
          TRC        1491        1361
          XINC          1
          YINC          1
          OPCODE     '    '
go subim                $subim I image
     wait subim
     tget subim
          inclass 'hgmphq'
          outclass 'sbmh_q'
$go subim                $subim Q image
     wait subim
     tget subim
          inclass 'hgmphu'
          outclass 'sbmh_u'
$go subim                $subim U image
     wait subim
$#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#
```

From abridle Thu Nov 3 13:18:32 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["848" "Thu" "3" "November" "1994" "13:18:31" "-0500" "Alan Bridle" "abridle
" nil "21" "CALIB A&P normalization" nil nil nil "11" nil nil (number " " mark "
Alan Bridle   Nov 3   21/848   " thread-indent "\"CALIB A&P normalization\"\
n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA48177; Thu, 3 Nov 1994 13:18:31 -0500
Message-Id: <9411031818.AA48177@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: CALIB A&P normalization
Date: Thu, 3 Nov 1994 13:18:31 -0500

Mark,

The bug has been found. Whenever you A&P calibrated a dataset with several sub-arrays (e.g. as when calibrating a DBCON'd dataset from more than one configuration), the amplitude gain normalization from the last sub-array was being applied to all of them. Eric has fixed this in TST. To do A&P calibration correctly on datasets with multiple sub-arrays you must therefore convert to the new AIPS file format (D) and run from TST.

Single-array calibration was being done correctly in OLD and NEW, and may still be done there.

The problem was noticed from the SNPLTs in a case where the last sub-array had some particularly large corrections. If you have checked your amplitude gain SNPLTs for multiple-array A&P amp calibrations and have seen no significant problems, then the effects on your data so far will have been small.

Alan

From abridle Thu Dec 1 15:28:56 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["5756" "Thu" "1" "December" "1994" "15:28:54" "-0500" "Alan Bridle" "abridle
" nil "115" "forwarded message from Wil van Breugel" nil nil nil "12" nil nil
(number " " mark "   Alan Bridle   Dec 1 115/5756 " thread-indent
"\"forwarded message from Wil van Breugel\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA50103; Thu, 1 Dec 1994 15:28:54 -0500
Message-Id: <9412012028.AA50103@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: forwarded message from Wil van Breugel
Date: Thu, 1 Dec 1994 15:28:54 -0500

------- Start of forwarded message -------
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA22259; Thu, 1 Dec 1994 15:11:38 -0500
Received: from igpp.llnl.gov by cv3.cv.nrao.edu (4.1/DDN-DLB/1.13)
      id AA29807; Thu, 1 Dec 94 15:11:10 EST
Received: from sundial.llnl.gov by igpp.llnl.gov (4.1/LLNL-1.19)
      id AA20245; Thu, 1 Dec 94 11:59:59 PST
Received: by sundial.llnl.gov (4.1/LLNL-1.18)
      id AA00603; Thu, 1 Dec 94 12:07:11 PST
Message-Id: <9412012007.AA00603@sundial.llnl.gov>
From: wil@sundial.llnl.gov (Wil van Breugel)
To: adv@igpp.llnl.gov
Subject: POSTDOCTORAL POSITIONS
Date: Thu, 1 Dec 94 12:07:11 PST

Dear colleague, we would appreciate if you could bring the attached
advertisement to the attention of interested candidates. Thank you
for your help.

Wil van Breugel, wil@sundial.llnl.gov

- --

POSTDOCTORAL POSITIONS IN ASTROPHYSICS

University of California
Institute of Geophysics and Planetary Physics
Lawrence Livermore National Laboratory

- --

The Institute of Geophysics and Planetary Physics (IGPP) at Lawrence
Livermore National Laboratory (LLNL) anticipates having several
postdoctoral positions available in its astrophysics program starting
in the fall of 1995.

Successful candidates will be expected to conduct a vigorous and
significant program of independent research. Applicants' fields of
research may be in any area of astrophysics: observational,
theoretical, computational, or experimental. Areas being pursued by
IGPP and LLNL staff include high energy astrophysics, plasma
astrophysics, nuclear and particle astrophysics, star formation and
stellar evolution, X-ray binaries, galactic radio and infrared studies,
galaxy formation and evolution, active galactic nuclei, extra-galactic

radio sources, and cosmology.

Major projects currently underway at IGPP/LLNL are:
1) Ground- and space-based observational studies of various radio source populations at optical and near-IR wavelengths, including imaging- and spectro-polarimetry of high redshift radio galaxies and quasars, and optical/near-IR/mm-line (CO) observations of ultraluminous far infrared galaxies and quasars (Wil van Breugel);
2) The development of adaptive optics and laser guide star systems for use at the Lick and Keck observatories, which will allow to correct for atmospheric seeing effects (Claire Max);
3) Searches for dark matter (Massive Compact Halo Objects - MACHO's) at Mount Stromlo Observatory (Australia) using novel large field of view optics and large format CCD's (Charles Alcock);
4) Variable star studies using two-color information with detailed time-baseline information from the MACHO-team data base (Kem Cook);
5) The FIRST (Faint Image of the Radio Sky at 21 cm) all sky radio survey with the Very large Array (B-configuration) which will provide a catalog of millions of radio sources for comparison with surveys in other wavebands (Bob Becker, UC Davis).

Postdoctoral fellows at IGPP will have access to LLNL's unique resources including supercomputers, the facilities of LLNL's Laboratory for Experimental Astrophysics (LEA), Lick Observatory and, in collaboration with IGPP staff members or UC faculty, Keck Observatory. IGPP also supports research with a 10 micron imaging camera at LEA and with an automated fiber-fed multi-object spectrograph designed and built at LEA in collaboration with UC Santa Cruz faculty.

We especially encourage candidates to apply with interest in the following areas:

- - imaging, spectroscopy, and spectro-polarimetry at optical and infrared wavelengths of high redshift radio galaxies and quasars,
- - optical, infrared, and mm-line (CO) observations of ultraluminous far infrared galaxies and quasars,
- - Galactic and extra-galactic infra-red spectroscopy,
- - cosmology, including particle and nuclear astrophysics, and galaxy formation/evolution,
- - adaptive optics,
- - experimental dark matter searches.

IGPP has a large network of SUN workstations and access to LLNL's supercomputer and image processing facilities. All major astronomical image analysis programs are available. In a joint effort with UC Davis faculty software is being developed for fast and flexible analysis of large astronomical catalogs. The IGPP hosts collaborators from all campuses of University of California and has an extensive postdoctoral and visitor program.

The IGPP postdoctoral appointments will be for 1-3 year terms. Salary and fringe benefits are very competitive, and adequate travel support will be made available. Applications may be made at any time, but serious consideration of candidates will commence 1 JANUARY 1995. Applicants should send their curriculum vitae, bibliography and a description of their planned research program to Dr. Wil van Breugel, Institute of Geophysics and Planetary Physics, Lawrence Livermore National Laboratory, 7000 East Ave, P.O. Box 808, L-413, Livermore, CA 94550. They should also arrange for three letters of recommendation to

be sent to this same address. A copy of the application material should be send to Alison Bradley-Carver, Recruiting and Employment Division, Lawrence Livermore National Laboratory, P.O. Box 5510, L-275, Dept.AJPTB14AB, Livermore, CA 94551.

For further information please contact Dr. Wil van Breugel at IGPP, Phone (510)-422-7195, FAX (510)-423-0238, or by email (Internet): wil@sundial.llnl.gov.

- ---------- End of forwarded message -------

From mswain Sat Dec 17 14:22:22 1994
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["453" "Sat" "17" "December" "1994" "14:22:21" "-0500" "Mark Swain" "mswain "
"<9412171922.AA28051@polaris.cv.nrao.edu>" "11" "Jansky Fellowship" nil nil nil
"12" nil nil (number " " mark " R Mark Swain   Dec 17   11/453   " thread-
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          id AA28051; Sat, 17 Dec 1994 14:22:21 -0500
Message-Id: <9412171922.AA28051@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: Jansky Fellowship
Date: Sat, 17 Dec 1994 14:22:21 -0500

Alan,

  I did not apply for the Jansky fellowship this year because of
unwritten guidline of descriminating against grad students from
the NRAO. Late yesterday, I learned that this guidline was just
recently explicitly removed. I asked Ken if there was anything I
could do and he recommended I talk to you, talk to Bob, and see if
I could apply late. Do you think that is a good idea, would you
support it, or should I put up and shut up?

Mark

From mswain Mon Dec 19 13:15:07 1994
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["383" "Mon" "19" "December" "1994" "13:15:06" "-0500" "Mark Swain" "mswain "
"<9412191815.AA22706@polaris.cv.nrao.edu>" "13" "Jansky Fellowship" nil nil nil
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Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA22706; Mon, 19 Dec 1994 13:15:06 -0500
Message-Id: <9412191815.AA22706@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: Jansky Fellowship
Date: Mon, 19 Dec 1994 13:15:06 -0500

Alan,

I have decided to apply for the Jansky Fellowship.
The deadline for letters of recomendation is Dec. 31.
Also, I am applying again for the SMA position which
has a Jan 15 deadline. I will leave a xerox copy
of the add in your box.

BTW, will away from C'ville for any extended period
during Jan, Feb, Mar or April? My goal is to defend
during the first week in April.

Mark

From mswain Wed Dec 21 08:24:12 1994
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["69" "Wed" "21" "December" "1994" "08:24:12" "-0500" "Mark Swain" "mswain "
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Swain Dec 21 6/69 " thread-indent "\"holiday schedule\"\n") nil]
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id AA53889; Wed, 21 Dec 1994 08:24:12 -0500
Message-Id: <9412211324.AA53889@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: holiday schedule
Date: Wed, 21 Dec 1994 08:24:12 -0500

Alan,

I am leaving town tomarrow and will return by
Jan. 2nd.

Mark

From mswain Mon Jan 2 21:49:57 1995
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["132" "Mon" "2" "January" "1995" "21:49:57" "-0500" "Mark Swain" "mswain "
"<9501030249.AA35090@polaris.cv.nrao.edu>" "5" "reference" nil nil nil "1" nil nil
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Message-Id: <9501030249.AA35090@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: reference
Date: Mon, 2 Jan 1995 21:49:57 -0500

If it is not much truoubble, can you give me
the references for Laing and Garrington
concerning the Laing-Garrington effect?

Mark

From abridle Mon Jan 2 22:47:10 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["477" "Mon" "2" "January" "1995" "22:47:09" "-0500" "Alan Bridle" "abridle "
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          id AA39866; Mon, 2 Jan 1995 22:47:09 -0500
Message-Id: <9501030347.AA39866@polaris.cv.nrao.edu>
References: <9501030249.AA35090@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: reference
Date: Mon, 2 Jan 1995 22:47:09 -0500

Hi Mark,

They are in the ref list for the big quasar paper
that you have the preprint of.

Thanks for bringing the car back to NRAO. I
have collected the key. I believe Mary's
problem is just a side-effect from the chemotherapy
and not a full-blown emergency. Will know more in the
morning. I'll probably be in at about the usual time
but may have to take a trip down to the hospital in
the a.m. to talk to her docs or/and bring her home if
she's doing better.
]]

A.
s

From abridle Tue Jan 3 21:26:36 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["526" "Tue" "3" "January" "1995" "21:26:35" "-0500" "Alan Bridle" "abridle "
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          id AA34791; Tue, 3 Jan 1995 21:26:35 -0500
Message-Id: <9501040226.AA34791@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: movements
Date: Tue, 3 Jan 1995 21:26:35 -0500

Hi Mark,

I had to be back and forth from the hospital a lot yesterday,
you had left by the time I tried to check in with you.
Tomorrow will be much of the same, so leave me an E-mail
if you have anything urgent for me!

We still don't know for sure what Mary's new problem is, but
most of the very bad possibilities have been eliminated. They
are doing some more tests tomorrow and I will need to be there
on and off much of the day as M. is heavily sedated and not
able to interact with the docs very much at all.

A.

From mswain Mon Jan 9 21:01:41 1995
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["236" "Mon" "9" "January" "1995" "21:01:41" "-0500" "Mark Swain" "mswain "
"<9501100201.AA24701@polaris.cv.nrao.edu>" "10" "letters" nil nil nil "1" nil nil
(number " " mark " R Mark Swain   Jan 9   10/236   " thread-indent
"\"letters\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu
 (AIX 3.2/UCB 5.64/4.03)
          id AA24701; Mon, 9 Jan 1995 21:01:41 -0500
Message-Id: <9501100201.AA24701@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: letters
Date: Mon, 9 Jan 1995 21:01:41 -0500

Alan,

I have left xeroxes of the AAS job registar pages which
contain postdoc positions I am applying for. I have
also left a set of pre-addessed envelopes. Deadlines
range from Jan 15 to Jan 30.

I hope Mary is doing well.

Mark

From abridle Tue Jan 10 00:04:27 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["275" "Tue" "10" "January" "1995" "00:04:26" "-0500" "Alan Bridle" "abridle
" nil "8" "Re: letters" nil nil nil "1" nil nil (number " " mark "   Alan Bridle
Jan 10   8/275   " thread-indent "\"Re: letters\"\n") nil]
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          id AA64464; Tue, 10 Jan 1995 00:04:26 -0500
Message-Id: <9501100504.AA64464@polaris.cv.nrao.edu>
References: <9501100201.AA24701@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: letters
Date: Tue, 10 Jan 1995 00:04:26 -0500

OK I'll be in some time tomorrow and will pick them up.

Mary has had another operation (last Wednesday) but
is recovering o.k. I am not sure when she will be
leaving the hospital but in any case it will be several
more days before she is able to take care of herself.

A.

```
From abridle Tue Jan 31 17:59:02 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["10753" "Tue" "31" "January" "1995" "17:59:02" "-0500" "Alan Bridle"
"abridle " nil "232" "Bridle's last draft" nil nil nil "1" nil nil (number " " mark
"     Alan Bridle       Jan 31  232/10753 " thread-indent "\"Bridle's last draft\"\
n") nil]
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Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA35189; Tue, 31 Jan 1995 17:59:02 -0500
Message-Id: <9501312259.AA35189@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Bridle's last draft
Date: Tue, 31 Jan 1995 17:59:02 -0500


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\newcommand{\arcsec}{\hbox{$^{\prime\prime}$}}
\newcommand{\farcs}{\hbox{$.\!\!^{\prime\prime}$}}
\newcommand{\degree}{^{\circ}}

\begin{center}
{\bf J2146+82 - A Large Radio Galaxy With Misaligned Outbursts?}
\end{center}
\begin{center}
Bill Cotton (NRAO-CV), Mark Swain (Univ. of Rochester, NRAO-CV),

Alan Bridle (NRAO-CV) \& Namir Kassim (NRL)

\end{center}

\vspace{.5in}

We propose a mix of high and low-resolution observations of the
unusually large NVSS source J2146+82 ($S_{1400} \sim 0.42$ Jy).  We
require high-resolution data to explore how much of the unusual
structure in this field may be part of a single, complex radio source.
We also wish to determine the total extent, spectral and polarimetric
properties of the diffuse components of what may be a large radio
galaxy exhibiting distinct ejection axes at different epochs.

The J2146+82 field (Fig.1) is one of the more remarkable radio
complexes revealed by the NVSS.  Two extended, elongated lobes
containing about 0.4 Jy span about {20\arcmin} across
a compact 10-mJy source (C). At this point it is not clear that
C is the ``core'' of this extended structure, though its location
```

and alignment with the ridge-line of the southern lobe clearly suggest this.

The POSS prints show a group of 17-19 magnitude objects within {15\arcsec}?? of (C). Three are red and diffuse, probably elliptical galaxies. The brightest galaxy is within {5\arcsec} of the NVSS position for the peak of C. The fourth object is neutral in color and looks stellar. The accuracy of the NVSS position should be about {2\arcsec} but if C is a blend of ``core'' and jet emission it need not coincide exactly with the optical identification in any case. If C is identified with the brightest galaxy, its redshift is likely to be $>$0.1 and might plausibly be as high as 0.3 (based on apparent magnitudes roughly estimated from the two POSS prints). If C proves not identified with this galaxy, its redshift may be even higher, of course.

If an association between the extended lobes and C can be confirmed, the projected linear size of the extended structure would be $>$1.5 Mpc (even by a conservative estimate using z$>$0.1 and H_0=100) and perhaps as high as 3.3 Mpc for z=0.3, which could place J2146+82 among the largest known extragalactic sources. (There are no conspicuously brighter galaxies within the radio structure with which the lobes might be identified to invalidate this conclusion even if C proves not to be connected to the lobes). The 1.4-GHz radio luminosity would be between 5×10^{24} and 5×10^{25} W Hz^{-1}. This luminosity range is consistent both with the observed edge-brightening of the radio lobes and with their imputed large size---at 1.4 GHz, edge-brightened lobes are common only above 5×10^{24} W Hz^{-1}, and radio sources larger than 1 Mpc are common only in a relatively narrow range of powers, from 10^{24} to 10^{26} W Hz^{-1}.

The J2146+82 field merits attention not only as a possible new example of a large radio galaxy, but also because it contains a significant excess of other radio sources. If this excess is anything other than an accident, the relationship of the other sources to the large lobes and to C is especially intriguing.

Sources A and B, both either extended or double, are also arranged quite symmetrically about C. This configuration is either an accident or an instance of activity in the parent on an axis misaligned with the rest of the source. From the 1.4-GHz source counts, we estimate the probability of finding the alignment and symmetry of features A and B around C randomly among the several thousand NVSS fields routinely inspected by Cotton as only $\sim 6 \times 10^{-3}$.

We therefore wish to image J2146+82 further to explore whether any or all of the additional sources can be related as parts of the same radio structure or as a chance superposition of independent sources. Any evidence that this grouping is not accidental will make J2146+82 a prime target for testing models of large, long-lived radio sources and possibly also of recurrent activity in such sources.

We want to explore the following possibilities.

{\it Are there flat-spectrum sub-arc-second components within any of the radio features that could identify them as independent sources?} We expect to find such a component at C if this is indeed the ``core'' of a radio galaxy associated with the POSS candidates, and its position should test this identification. Any other flat-spectrum

compact components, e.g. in A, B or D would eliminate that object as part of structure directly produced by C. Steeper-spectrum compact emission in these features might however signify hot spots in radio lobes, which could add to evidence for physical association with the other structures. We ask for 2 hours of A configuration time at X band and C band to explore these possibilities, and to test whether there is a small-scale jet or jets originating from C, and if so in which direction.

{\it Are there low-level diffuse features that could show which of these features might be physically connected to C?} Both the morphology and spectral gradients in the most extended structure could give clues to the permissible evolutionary connections between the lobes, A, B and C, e.g. is there any spectral evidence that the lobes are older than any extended emission along the A-B-C axis? The most sensitive searches for diffuse, possibly steep-spectrum emission can be done in the D configuration at L Band and at P Band. To look for systematic spectral gradients we also propose a scaled-array series, using a D configuration mosaic at C Band, the C configuration at L Band and the B configuration at P Band. This series will further be used to examine the depolarization of the lobes. The percentage polarizations of the north and south lobes at 1.4 GHz are 16\% and 10\% respectively but the E-vectors are quite well-organized, so the lobes may be becoming Faraday thick by $\sim$ 1 GHz. We will use these scaled-array data to look for any depolarization asymmetry between the lobes (including the P Band data if we can calibrate out relative changes in the apparent position angles through the observing run due to ionospheric Faraday rotation).

{\it Is there a large-scale jet in either the extended radio lobes or along the A-B-C axis whose path could test whether C is their parent?} Whatever the relationship to other sources in the field, the lobes are part of a large source with a low-prominence core. We should expect this source to be near the plane of the sky and thus exhibit two weak or no radio jets rather than one prominent jet, on the standard models for sources with $\sim 10^{25}$ W Hz^{-1} at 1.4 GHz. We will anticipate this by searching for any large-scale jet(s) at a resolution and frequency that discriminates against the more diffuse, steep-spectrum emission of the lobes but will not over-resolve any weak extended jet emission with an $\alpha \sim 0.6$ spectrum. We will combine a C configuration observation at C Band with the proposed D configuration data to make a higher-resolution mosaic. This image should also help to clarify relationships between the extended structures and any fine structure revealed by the A configuration observations.

Note that if we were to find an asymmetric, prominently one-sided jet or a jet-correlated depolarization asymmetry in this source, the standard models (Laing 1988, Garrington
{\it et al.} 1988, 1991) would
ask that the source be oriented towards our line of sight, increasing the imputed size. So if our expectation of a {\it weak} jet system proves to be incorrect, we could acquire good evidence for a {\it very} large radio source!

Finally, we note that Source D is also brighter and closer to the others than would be expected randomly from the source counts alone (probability again less than 1\% within the sample scrutinized by Cotton). A radical alternative interpretation of the excess of

sources near J2146+82 would be that A is indeed unrelated to the others, but that D and B are a gravitationally-lensed image of the main source. Such {~ 4\arcmin} ``image splitting'' would require a cylindrical lens with a large linear mass density $\sim 10^{15}M_{\odot}$ Mpc^{-1}, comparable to the average expected in a supercluster (Sanders {\it et al.} 1984). Without evidence for foreground galaxies, this interpretation is highly speculative. But because such imaging would not change the radio surface brightnesses, only the apparent image scales, it is easily tested by determining the relative surface brightnesses of putative ``corresponding' features in B+D and in the main source at higher angular resolution than in Figure 1. Our proposed intermediate-resolution observations will allow this test as a ``free spin-off'' from the rest of the study.

We therefore request the following VLA configurations and frequencies:

A array: 2 hours to search for fine structure in and around C and each of the small-diameter sources in the field at both C and X bands, to assess whether there are independent parent objects for any of them and to determine the orientation of any small-scale jet(s) near C.

B array: 4 hours at P Band to sample intermediate spatial scales in the lobes for spectral and depolarization imaging.

C array: 4 hours divided between C and L Band, the former primarily to search for large-scale jets and other lobe fine structure that may help establish relationships between sources in the field morphologically, the latter primarily to search for signs of spectral evolution and depolarization.

D array: 2 hours to sample short spacings at C, L and P bands, best done near lower culmination for maximum sensitivity to the most extended (and likely steepest-spectrum) emission.

\vspace{.25in}
\begin{center}
References
\end{center}
\vspace{.25in}

\noindent{Garrington, S.T., Leahy, J.P., Conway, R.G. \& Laing, R. A. 1988, Nature, 331, 147.}

\noindent{Garrington,S.T., Conway, R.G. \& Leahy, J.P. 1991, M.N.R.A.S. 250, 171.}

\noindent{Laing, R.A. 1988, Nature, 331, 149.}

\noindent{Sanders, R.H., van Albada, T.S. \& Oosterloo, T.A. 1984, Ap.J. 278, L91.}

\end{document}

\special{psfile= J2146+82cntr.ps hoffset=575 voffset=-300 hscale=85 vscale=85 angle=90}

From abridle Tue Jan 31 18:01:45 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
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nil "5" "One typo" nil nil nil "1" nil nil (number " " mark "   Alan Bridle
Jan 31   5/74   " thread-indent "\"One typo\"\n") nil]
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Message-Id: <9501312301.AA23945@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: One typo
Date: Tue, 31 Jan 1995 18:01:45 -0500

Delete the ?? after the 15\arcsec in para.3, line 1
in file as sent.

A.

From mswain Wed Jun 21 17:29:20 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
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      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA51953; Wed, 21 Jun 1995 17:29:20 -0400
Message-Id: <9506212129.AA51953@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: last 3 weeks
Date: Wed, 21 Jun 1995 17:29:20 -0400

Alan,

I have taken most of the past 3 weeks off to do some
major work on our house. We had two major floods back-
to-back and our previous stop-gap measures to prevent
flooding were being overwhelmed.

My job at Simpson Weather Associates is nominaly 1/4 time
which I think will allow me to continue to make progress
on my thesis.

If your around, early next week would be a good time
for us to talk since I might have gotten some work done
by then. I'm currently working on the observe file for
our project with Bill. Hope your trip to Socorro was went
well.

Mark

From root Tue Sep 5 16:02:56 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["8194" "Tue" "5" "September" "1995" "16:02:55" "EDT" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "224" "" "^From:" nil nil "9" nil nil nil nil]
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Received: from truchas.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA37909; Tue, 5 Sep 1995 16:02:56 -0400
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
id AA04341; Tue, 5 Sep 95 16:02:55 EDT
Message-Id: <9509052002.AA04341@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Tue, 5 Sep 95 16:02:55 EDT

Outline

(see end for abbreviations)

JETS:

General Jet/Counterjet characteristics
- ~1% source flux at C band
  (any wavelength dependence will be specified)
- miss alignment of initial axes
  ~6 degrees
- Jet/Counterjet arm length ratios
  ~0.75
- Jet/Counterjet (J/CJ) relative surface brightness
  ~2:1
- Jet mostly straight and traceable into hot spot
- CJ has at least 1 bend fairly early on
- CJ not traceable into either West lobe hot spot candidate
  CJ bends ~180 deg. if the northern West lobe hot spot
  candidate steep gradient section is the ``working surface.''
- bright knots within jet and bright segment in CJ
  knots at beginning and end of jet straight segment
  (0.4 arcsec picture or contour plot - possibly a Sobel
  filter image). These oblique features are inclined to the
  jet axis by ~45 degrees.
- very low intrinsic polarization for J or CJ
  give integrated polarized intensity limits for J&CJ
  as well as integrated POLI slice limits for J&CJ
- polarization minima features border jet (rails)
  look at picture
- cocoon of material around jet in both I and POLI

Jet and Counterjet Profile Shapes
- integrated independent transverse slices along jet
  -emission excess (cocoon) very apparent
- jet total I profile shape either flat-topped or edge-brightened
  -1,2, and 3 Gauss comp. fit results
  -would be nice to have model to fit
- CJ total I profile
  -(not been done yet because there is little to work w/)
  -main question: is CJ profile qualitatively similar to J profile?
- POLI jet profiles seem to mostly have no jet emission
  -show plot (avg. ambient POLI vs. POLI between rails)
  -polarized jet emission is present at knots at beginning and
   end of straight jet segment.

The Rails
- rails ~0.4 arcsec wide (measured from 0.4 arcsec res. images)
- rails ~ 2.5 arcsec center-to-center separation
- frequency dependence of rail position?
  -seems to be no systematic difference but should know better soon.
- rail depth estimated by extrapolating surrounding emission
- rails depth does not correlate w/ frequency
  -show plot
  -means rails not a Faraday depolarization effect
- rail depth correlates with ambient polarized position angle
  -frequency dependence of this correlation?
  -North and South rail different?
  -suggests rails caused by cancelation of ambient polarized emission from emission in a thin sheath around the jet in which the B field has been sheared. Limb brightening then causes the rails.
  -can the above model work quantitatively?

The Cocoon
- seen in both total I and POLI for Jet
- complex profile
- width varies by a factor of ~2 (total I)
  -width variation in POLI?
- cocoon not detected for CJ (still true?)
- J-cocoon/CJ-cocoon limits
  -can only do total I because of POLCO blanking
  -can CJ-cocoon non-detect be ascribed to a J/CJ brightness ratio difference in the J & CJ cocoons?
- is J-cocoon spix jet-like or lobe-like?
- is there a systematic % polarization gradient?

Jet knots
- don't appear to be regions of changes in opening angle
- impose local order of jet B field
  -width of this event?
  -position of jet POLI max. in relation to feature?

Jet and Counterjet Opening Angle
- jet width by position of two Gaussians fit to total I slice regions
  -lobe and cocoon emission corrected
  -shows expansion and contraction
  -opening angle ~2.2 degrees extrapolates back to core
  -after ~50 arcsec jet opening angle ~-2.2 degrees
  -same results with single component Gaussian fitting
- jet with by position of rails at slice regions
  -rails have relatively constant width
- show plot of jet width by 2 Gaussian and rail position
- CJ width by single component Gaussian fit
  -same initial opening angle as jet
  -no evidence for change in opening angle along length of CJ
- couldn't use rail position to measure CJ width
- conclusion: depends on what constitutes the jet.
  -jet defined by total I expands and contracts
  -CJ defined by total I expands
  -jet defined by rail position doesn't expand
  -prefer to define boundary of the ``jet'' by the rail position rather than total I emissivity.

Some Conclusions to Date:
- need models which predict jet transverse emissivity profile as well as radial location of B field shear layer and shear layer thickness.
- jet opening angle qualitatively consistent with fluting instability.
- jet has tangled magnetic field.
- cocoon is more lobe-like or jet-like?
- jet undergoes some interaction with external medium
- why do jet, rails, and cocoon all become detectable together?

HOT SPOTS (HS)
- two candidates in West lobe.
- both East
lobe HS and the northern West lobe HS imply large bend angles for jets to get to ``the working surface''.
- both West lobe HS have similar spix
- intensity, spix, and % pol differences between East lobe & West lobe HS.
- bright arc coming out of northern side of jetted lobe HS
  - -a bow shock?
  - -a filament?

I know this section is week; this is all I have currently.

FILAMENTS:

General Filament Description
- asymmetry in filament character in East in West lobe
  - -more bright filaments in east lobe (quantify?)
  - -East lobe filaments organized in a ``ball''
- typical bright filament properties
  - -emissivity enhancement
  - -lengthy (~25 arcsec)
  - -B field configuration (parallel to local fil axis)
- primarily east lobe filaments will be studied because east lobe has higher contrast filaments.
- dark spot and dark regions; are there dark features/fil?

Filament Properties in Detail (East lobe)
- hierarchy of transverse scales
  - -3 arcsec, 1.3 arcsec, and 0.4 arcsec structure
  - -bright fil give impression of being made of smaller fil. (reminds me of the Cantor set)
  - -could this be quantified in bright regions? (probably not, but De Graphs technique not yet tried.)
  - -try structure functions to measure presence of multiple scales
  - -could a width-emissivity relation be constructed for filaments and subfilaments?
  - -show image
- spix of fil same as spix of lobe (to 1st order)
  - -show spix map
- fil prominence ((grad I)/I) appears independent of location (make quantitative) but fil length shortens (make quantitative)
  - -is this only true of East lobe?
- do other fil properties (width, brightness, %pol, etc...) correlate w/ ambient properties

-slice and stack for average fil profile
-correlations of fil properties w/ lobe edge steepness

Dark Features
- dark spot
  -depth as function for freq.
  -no interposed optical object detected
  -dark lane connects to dark spot
- other dark regions
  -look at bright-dark feature crossings
  -integrate profile of dark features
- try to answer questions: are these dark regions actual features with properties or merely an absence of emission.

What the Filament Models Predict
-discuss major models (Tribble, Eliek, Dal Pino, etc...)
-some models predict dark filaments
-all models predict or imply spectral differences between lobe and filaments

LOBES
Lobe Properties
- small amount of Faraday Rotation
  -Faraday rotation map
  -depolarization features in Faraday screen
- dominant spix feature is well organized gradient
  -orientation of spix gradient
  -length scale over which gradient dominates any spix change

What Lobe Spectral Aging Models Predict
- present standard spectral aging models
  -JP, KP, Tribble
- color-color diagrams for spectral aging models

Conclusions for Filaments and Lobes
-necessarily sketchy at this point
-current fil models do not describe 3C353
 models predict fil w/ different spix from lobes
-current spectral aging models don't work for 3C353
  -UCL band color-color plot too steep
-hope to discus but no specifics yet
  -particle diffusion
  -equipartition
  -implications of large scale spectral gradient
  -connections between fil and hot spot

HS = hot spot
J = jet
CJ = counter jet
POLI = polarized intensity
total I = total intensity
rail(s) = polarization minima boarding the jet
spix = spectral index
POLCO = polarized intensity correction because of the Ricean bias

pol = polarization
fil = filament

From abridle Wed Sep 6 09:45:41 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1068" "Wed" "6" "September" "1995" "09:45:41" "-0400" "Alan Bridle"
"abridle" nil "23" "Two general comments" "^From:" nil nil "9" nil nil nil nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA65748; Wed, 6 Sep 1995 09:45:41 -0400
Message-Id: <9509061345.AA65748@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: Two general comments
Date: Wed, 6 Sep 1995 09:45:41 -0400

I have a number of detailed ones, but here are a couple of larger-scale questions you might want to consider before the phone meeting (when?):

1. The outline as it stands is a smorgasbord of phenomena, probably too rich and to many to be digested in the time available before January. It needs a stronger physical focus to narrow it down. You should pick about half-a-dozen physical questions and concentrate on the things that are needed to answer them. Could you think about that before we talk on the phone? Otherwise we may just wander.

2. The "rail effect" focuses attention on the issue of the intrinsic magnetic configurations in the source, i.e. on degrees of polarization (orderliness) and on the de-rotated position angle distributions throughout the lobes. I think you should plan to derive a B-field image for the lobes so that you can describe the basic magnetic configuration within which the jet/cocoon phenomena are embedded. This will come naturally from Faraday RM analysis, which we now know you can't avoid while modeling the "rails"!

A.

```
From root Wed Sep  6 13:53:01 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil nil]
      ["3555" "Wed" "6" "September" "1995" "13:53:00" "EDT" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "99" "" "^From:" nil nil "9" nil nil nil nil]
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          id AA74122; Wed, 6 Sep 1995 13:53:01 -0400
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
      id AA04982; Wed, 6 Sep 95 13:53:00 EDT
Message-Id: <9509061753.AA04982@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Wed, 6 Sep 95 13:53:00 EDT

Record for tape ImageMaster.2
(tape w/ 60 files given to Alan 6Sep95)

     OL1/X_1.3    .SBMH_I.   10 MA \
     OL1/X_1.3    .SBMH_Q.   10 MA  |
     OL1/X_1.3    .SBMH_U.   10 MA  |
     N2L2/X_1.3   .SBMH_I.   10 MA  | 1.3 arcsec image set with X band
     N2L2/X_1.3   .SBMH_Q.   10 MA  | inner u-v coverage
     N2L2/X_1.3   .SBMH_U.   10 MA  |
     C/X_1.3      .SBMH_I.   10 MA  |
     C/X_1.3      .SBMH_Q.   10 MA  |
     C/X_1.3      .SBMH_U.   10 MA  |
 10  X_1.3        .SBML_I.   10 MA  |
     X_1.3        .SBML_Q.   10 MA  |
     X_1.3        .SBML_U.   10 MA /

     OL1/U_1.3    .SBMH_I.   10 MA \
     OL1/U_1.3    .SBMH_Q.   10 MA  |
     OL1/U_1.3    .SBMH_U.   10 MA  |
     N2L2/U_1.3   .SBMH_I.   10 MA  |
     N2L2/U_1.3   .SBMH_Q.   10 MA  | 1.3 arcsec image set with U band
     N2L2/U_1.3   .SBMH_U.   10 MA  | inner u-v coverage
     C/U_1.3      .SBMH_I.   10 MA  |
 20  C/U_1.3      .SBMH_Q.   10 MA  |
     C/U_1.3      .SBMH_U.   10 MA  |
     X/U_1.3      .SBML_I.   10 MA  |
     X/U_1.3      .SBML_Q.   10 MA  |
     X/U_1.3      .SBML_U.   10 MA /

     U_1.5        .SBML_I.   10 MA \
     U_1.5        .SBML_Q.   10 MA  | native U band
     U_1.5        .SBML_U.   10 MA /

     OL1_1.3      .SBMH_I.   10 MA \
     OL1_1.3      .SBMH_Q.   10 MA  | native 1.4 GHz
 30  OL1_1.3      .SBMH_U.   10 MA /

     OL1/X_3      .SBMH_I.   10 MA \
     OL1/X_3      .SBMH_Q.   10 MA  |
     OL1/X_3      .SBMH_U.   10 MA  |
     NL2/X_3      .SBMH_I.   10 MA  |
     NL2/X_3      .SBMH_Q.   10 MA  |
     NL2/X_3      .SBMH_U.   10 MA  | 3 arcsec image set with X band
     C/X_3        .SBMH_I.   10 MA  | inner u-v coverage
     C/X_3        .SBMH_Q.   10 MA  |
```

```
     C/X_3       .SBMH_U.   10 MA  |
 40  X_3         .SBML_I.   10 MA  |
     X_3         .SBML_Q.   10 MA  |
     X_3         .SBML_U.   10 MA /

     OL1/U_3     .SBMH_I.   10 MA \
     OL1/U_3     .SBMH_Q.   10 MA  |
     OL1/U_3     .SBMH_U.   10 MA  |
     N2L2/U_3    .SBMH_I.   10 MA  |
     N2L2/U_3    .SBMH_Q.   10 MA  |
     N2L2/U_3    .SBMH_U.   10 MA  |
     C/U_3       .SBMH_I.   10 MA  | 3 arcsec image set with U band
 50  C/U_3       .SBMH_Q.   10 MA  | inner u-v coverage
     C/U_3       .SBMH_U.   10 MA  |
     X/U_3       .SBML_I.   10 MA  |
     X/U_3       .SBML_Q.   10 MA  |
     X/U_3       .SBML_U.   10 MA  |
     U_3         .SBML_I.    1 MA  |
     U_3         .SBML_Q.    1 MA  |
     U_3         .SBML_U.    1 MA /

     C/X_.44     .SBMH_I.   10 MA \
     C/X_.44     .SBMH_Q.   10 MA  | 0.44 arcsec C band images with
 60  C/X_.44     .SBMH_U.   10 MA /  X band inner u-v coverage
```

Key:

(1) First letter indicates frequency band.
  OL1 = 1.4 GHz
  N2L2 = 1.7 GHz
  C = 5 GHz
  X = 8.5 GHz
  U = 14.9 GHz

(2) Letter following / indicates the frequency band u-v clipping.
Thus, C/X means 5 GHz data clipped to X band inner (but not outer)
u-v coverage (all u-v data inside .75 kilolamda radi removed in
this case).

(3) The number following _ indicates the resolution. Images with
resolution lower than that intrinsic to the progenitor u-v data
were made by imaging the u-v data with an outer u-v limit. A taper
(dependent on frequency) was applied to make the beam shapes
similar at the differently frequencies.
  _3 = a 3 arcsec resolution image
  _1.3 = a 1.3 arcsec resolution image
  _.44 = a 0.44 arcsec resolution image

(4) The out sequence letters prior to _ mean the following:
  SBMH = a "HGEOMed" image was then sub-imaged
  SBML = a "LTESSed" image was then sub-imaged

(5) The sequence number 10 means a "final" image.

From mswain Mon Oct 2 15:56:41 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil nil]
  ["10769" "Mon" "2" "October" "1995" "15:56:41" "-0400" "Mark Swain" "mswain"
nil "285" "Teleconfrence w/ Dan" "^From:" nil nil "10" nil nil nil nil]

nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA61667; Mon, 2 Oct 1995 15:56:41 -0400
Message-Id: <9510021956.AA61667@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: Teleconfrence w/ Dan
Date: Mon, 2 Oct 1995 15:56:41 -0400

Alan,

Dan does not wish to commit to a confrence time (for tomarrow afternoon) at this time. Tomarow morning I should be able to get a time commitment out of Dan.

The most recent draft of my outline is Sep 7. It is the one Dan has been looking at so I won't up date it. A copy of the outline follows.

Outline

(see end for abbreviations)

QUESTIONS:
- what feature(s) is/are ``the jet''?
  - -jet = the volume through which E & p are transported to lobes
  - -is the total I jet only a tracer of the ``true jet''?
    if so, how is the total I jet related to the true jet?
  - -how do we measure the width of the jet?
  - -is the jet expanding?
- how do the widths, strengths, and existence of the multiple jet scales correlate?
  - -is the cocoon wider where total I jet wider?
  - -do jet, rails, cocoon all ``turn on'' together?
- what similarities or differences exist between sidedness relationships for jet features?
  - -is J/CJ I flux ratio different from Jcocoon/CJcocoon ratio?
- is the cocoon lobe material or jet material?
- can a simple physical picture explain total I jet, rails, & cocoon?

- what constitutes a filament?
- what range of scales are associated with filaments
  - -(I think there are at least 3 or 4 scales)
  - -what physical parameters do the ranges of scale, when taken with other observed properties of filaments imply?
- can filaments be plausibly connected to other features in the source or are they formed by local affects?
  - -do observed filament properties vary systematically w/ location
  - -how do measured filament prop. compare w/ other parts of source

- is there a component to lobe emission other than filaments?
- are the lobe spectra consistent w/ spectral aging models?
- how organized are observed lobe properties?
  - -potentially strong implications for particle transport

- generally, what are the B configurations and degree of organization for source features
  -jets, cocoons, filaments, lobes

There is a hierarchy of scales within the radio source ranging from the smallest features resolvable in the source to largest scales of lobe emission. On casual inspection jets, hot spots, filaments, and lobes each seem to define there own scales; in actuality, there is a range of features and scales associated with each of these categories. The way features on different scales are organized, correlate (or fail to) and the symmetries (or lack there of) between categories of features on different sides of the central feature constrain the physical interpretation of the data.

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  - -orientation of spix gradient
  - -length scale over which gradient dominates any spix change

What Lobe Spectral Aging Models Predict
- present standard spectral aging models
  - -JP, KP, Tribble
- color-color diagrams for spectral aging models

Conclusions for Filaments and Lobes
- -necessarily sketchy at this point
- -current fil models do not describe 3C353 models predict fil w/ different spix from lobes
- -current spectral aging models don't work for 3C353
  - -UCL band color-color plot too steep
- -hope to discus but no specifics yet
  - -particle diffusion
  - -equipartition
  - -implications of large scale spectral gradient
  - -connections between fil and hot spot

HS = hot spot
J = jet
CJ = counter jet
POLI = polarized intensity
total I = total intensity
rail(s) = polarization minima boarding the jet
spix = spectral index
POLCO = polarized intensity correction because of the Ricean bias
pol = polarization
fil = filament

From root Fri Oct 13 15:39:48 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["980" "Fri" "13" "October" "1995" "15:39:47" "EDT" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "27" "" "^From:" nil nil "10" nil nil nil nil]
nil)
Received: from truchas.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA77812; Fri, 13 Oct 1995 15:39:47 -0400
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
id AA02431; Fri, 13 Oct 95 15:39:47 EDT
Message-Id: <9510131939.AA02431@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Fri, 13 Oct 95 15:39:47 EDT

Dan,

The following is my proposed schedule. It should contain two cases.
The case presented is the "less jets" case in which less will be made
of associations and relationships between the jet and other elongated
features which might also visualize properties of the outflow. The
other case is the "more jets" case in which jets and their
relationships to associated features plan a larger role in the thesis.
The "more jets" case shifts everything back one week. By the middle of
next week, I hope to know which case I will be using.

23 Oct. Alan gets preliminary jets chapter draft

30 Oct. Alan gets jet chapter draft

6 Nov. Dan and Alan get jet chapter draft
(this means Dan's copy leaves Fed X on 6 Nov.)

20 Nov. Alan gets preliminary filaments & lobes chapter draft

27 Nov. Alan gets filaments & lobes chapter draft

4 Dec. Dan and Alan get filaments & lobes chapter
(this means Dan's copy leaves Fed X on 4 Dec.)

18 Dec. Alan gets draft of introduction chapter

```
From root Wed Oct 25 17:55:04 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["14691" "Wed" "25" "October" "1995" "17:53:56" "-0400" "AIPS user"
"aips@rhesus.cv.nrao.edu" nil "473" "" "^From:" nil nil "10" nil nil nil nil]
      nil)
Received: from rhesus.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA127659; Wed, 25 Oct 1995 17:55:03 -0400
Received: by rhesus.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA16861; Wed, 25 Oct 1995 17:53:56 -0400
Message-Id: <9510252153.AA16861@rhesus.cv.nrao.edu>
From: aips@rhesus.cv.nrao.edu (AIPS user)
To: abridle@rhesus.cv.nrao.edu
Date: Wed, 25 Oct 1995 17:53:56 -0400

$This procedure is an attempt to automate production of 3C353 composit
$deconvolved, "final" images.  The steps it does are commented in.
$1)  initial hot-spot and core clean removal, make dirty beams for VTESS
$2)  vtess deconvolution
$3)  rstor clean components from steps (1&2) to VTC image
$4)  zero level measure, zero level correction
$5)  primary beam correction
$6)  puthead to align core to standard frame
$7)  hgeom to grid image to standard frame
$8)  subim result of (10) to standard size
$
$udi  output file disk
$ubdi  baddisks
$uvinna  uv file name
$uvincls uv file class
$uvinseq uvfile seq
$uvdi  disk w/ uvdata
$uscrdi  scratch disk
$una  name for files from automated imaging process
$useq  the seq # used during automated sequence
$ura  rashift
$udec  decshift
$utpr  uvtaper
$urng1  inner uvrange
$urng2  outer uvrange
$uflux1  flux level to clean to for lobes and core
$uflux2  flux leve to further clean core too
$vtniter vtess niter
$utniter utess niter
$vnoise  vmap noise (used as noise in VT&UT)
$keyval1 RA ref pix shift
$keyval2 DEC ref pix shitt
$
$=============================================================$
$         Asign values to adverbs and inputs                  $
$=============================================================$
udi 7
ubdi 2,5
uvinna 'F53-C-ABCD'
uvincls 'XSC'
uvinseq 5
uvdi 7
uscrdi 3
una 'C/U_1.3'
useq 10
```

```
ura = .336
udec = 0
utpr 140,115
urng 1.475,204
uflux1 .026
uflux2 .008
vtniter 50
utniter 30
vnoise .000044
keyval1 1024, .15
keyval2 1025, .275
save 'mr_353_inputs'
$
$
$************************************************$
$                  "Program" part                $
$************************************************$
$
$
$================================================$
$   pre-clean I, dirty QU images and IQU beams #1  $
$================================================$
get 'mr_353_inputs'
     task 'mx'
          INNAME     uvinna
          INCLASS    uvincls
          INSEQ      uvinseq
          INDISK     uvdi
          IN2NAME    una
          IN2CLASS   'uvwork'
          IN2SEQ        0
          IN2DISK    uscrdi
          BCHAN         1
          ECHAN         0
          CHANNEL       0
          NPOINTS       1
          CHINC         1
          STOKES     'I   '
          BIF           1
          EIF           2
          OUTNAME    una
          OUTDISK    udi
          OUTSEQ     useq
          CELLSIZE       .32         .32
          IMSIZE     2048        2048
          NFIELD        1
          FLDSIZE       0
          RASHIFT    ura
          DECSHIFT   udec
          NBOXES        3
          box(1,1) 1017.00
          box(2,1) 1019.00
          box(3,1) 1033.00
          box(4,1) 1032.00
          box(1,2)  640.00
          box(2,2)  935.00
          box(3,2)  815.00
          box(4,2) 1130.00
          box(1,3) 1378.00
```

```
          box(2,3)  930.00
          box(3,3) 1443.00
          box(4,3) 1042.00
          UVTAPER    utpr
          UVRANGE    urng
          UVWTFN     '  '
          UVBOX         0
          ZEROSP        0
          XTYPE         5
          YTYPE         5
          XPARM         0
          YPARM         0
          GAIN           .001
          FLUX          uflux1
          MINPATCH   1024
          NITER    100000
          BCOMP         0
          BMAJ         -1
          BMIN          1.3
          BPA           0
          PHAT          0
          FACTOR        -.5
          DOTV         -1
          CMETHOD    '    '
          GUARD        -1,-1
          MAXPIXEL      0
          BADDISK    ubdi
go mx                       $clean hot-spots and core
     wait mx
     indi udi
     inna una
     inclass 'icln'
     inseq useq
     keyword 'niter'
geth                          $find number of cc for restart
     tget mx
     niter 100000
     bcomp keyvalue(1)
     nboxes 1
     flux = uflux2
go mx                       $clean core some more
     wait mx
          get 'mr_353_inputs'
          inna una
          inclass 'icln'
          inseq useq
          indi udi
          outna una
          outclass 'vticln'
          outseq useq
          outdi udi
go rename                   $rename icln to vticln
          inna una
          inclass 'ibeam'
          inseq useq
          indi udi
          intype 'ma'
zap                         $zap old ibem
     recat
```

```
     tget mx
          niter 0
          bcomp 0
go mx                     $make dirty ibeam for VT
     wait mx
          inna una
          inclass 'ibeam'
          inseq useq
          indi udi
          outna una
          outclass 'vtibem'
          outseq useq
          outdi udi
go rename                 $rename ibeam to vtibem
     tget mx
          stokes 'q'
$go mx                     $make dirty Q map and beam
     wait mx
          stokes 'u'
$go mx                     $make dirty U map and beam
     wait mx
$================================================$
$              VT and UT deconvolution            $
$================================================$
get 'mr_353_inputs'
     task 'vtess'
          INNAME     una
          INCLASS    'VTICLN'
          INSEQ      useq
          INDISK     udi
          IN2NAME    una
          IN2CLASS   'VTIBEM'
          IN2SEQ     useq
          IN2DISK    udi
          IN3NAME    '            '
          IN3CLASS   '      '
          IN3SEQ        0
          IN3DISK    uscrdi
          OUTNAME    una
          OUTCLASS   'VT    '
          OUTSEQ     useq
          OUTDISK    udi
          OUT2NAME   una
          OUT2CLAS   'VTC   '
          OUT2SEQ    useq
          OUT2DISK   udi
          NMAPS         1
          NITER      vtniter
          NOISE      vnoise
          FLUX          0
          BLC           0
          TRC           0
          DOTV         -1
          PRTLEV        1
          PBSIZE        0
          BMAJ          1.3
          BMIN          1.3
          BPA           0
          BADDISK    ubdi
```

```
go vtess                  $stokes I MEM
     wait
 vtess
     recat
     tget vtess
     task 'utess'
          inclass 'qmap'
          in2class 'qbeam'
          outclass 'qt'
          out2clas 'qtc'
$go utess                  $stokes Q MEM
     wait utess
$     recat
     tget utess
          inclass 'umap'
          in2class 'ubeam'
          outclass 'ut'
          out2clas 'utc'
$go utess                  $stokes U MEM
     wait utess
$     recat
$================================================$
$        restor pre-cleaned cc to VTC image        $
$================================================$
get 'mr_353_inputs'
          inna una
          inclass 'vticln'
          inseq useq
          indi udi
          keyword 'niter'
geth                       $determine number of cc to rstor
     task 'rstor'
          niter = keyvalue(1)
          INNAME     una
          INCLASS    'VTC   '
          INSEQ      useq
          INDISK     udi
          BLC           0
          IN2NAME    una
          IN2CLASS   'VTICLN'
          IN2SEQ     useq
          IN2DISK    udi
          INVERS        0
          OUTNAME    una
          OUTCLASS   'RSTOR '
          OUTSEQ     useq
          OUTDISK    udi
          $NITER      ccnum
          BMAJ          1.3
          BMIN          1.3
          BPA           0
          BADDISK    ubdi
     type 'restoring',niter,' clean comp.'
go rstor                   $rstor clean comp.
     wait rstor
$================================================$
$     determine and apply zero level correction    $
$================================================$
$get 'mr_353_inputs'
```

```
          inname una
          inclass 'rstor'
          inseq useq
          indi udi
zlc1p3                    $determine zerl level correction
     type avg
     aparm(3) = -avg
     type aparm(3)
     task 'comb'
          INNAME     una
          INCLASS    'rstor'
          INSEQ      useq
          INDISK     udi
          IN2NAME    una
          IN2CLASS   'rstor'
          IN2SEQ     useq
          IN2DISK    udi
          DOALIGN       1
          OUTNAME    una
          OUTCLASS   'ZLCRST'
          OUTSEQ     useq
          OUTDISK    udi
          BLC           0
          TRC           0
          OPCODE 'sum'
          aparm 0
          APARM(1)  1
          aparm(2)  1E-30
          BPARM         0
          opcode 'sum'
          aparm(3) = -avg
     type 'Adding', aparm(3), 'to im to correct zero level offset.'
go comb                   $apply zero level correction
     wait comb
$================================================$
$          apply primary beam correction          $
$================================================$
get 'mr_353_inputs'
     task 'pbcor'
          USERID        0
          INNAME     una
          INCLASS    'ZLCRST'
          INSEQ      useq
          INDISK     udi
          BLC           0
          TRC           0
          OUTNAME    una
          OUTCLASS   'PBCZLC'
          OUTSEQ     useq
          OUTDISK    udi
          DPARM         0
          GPOS          0
go pbcor                  $pbcor I image
     wait pbcor
     tget pbcor
          inclass 'qtc'
          outclass 'pbcqtc'
$go pbcor                  $pbcor Q image
     wait pbcor
```

```
          inclass 'utc'
          outclass 'pbcutc'
$go pbcor                  $pbcor U image
     wait pbcor
$================================================$
$         puthead to set IQU image RA&DEC          $
$================================================$
get 'mr_353_inputs'
     task 'subim'
           USERID        0
           INNAME     una
           INCLASS    'PBCZLC'
           INSEQ      useq
           INDISK     udi
           OUTNAME    una
           OUTCLASS   'pthpbi'
           OUTSEQ     useq
           OUTDISK    udi
           BLC           0
           TRC           0
           XINC          1
           YINC          1
           OPCODE     '    '
go subim                   $copy I image
     wait subim
     tget subim
          inclass 'pbcqvt'
          outclass 'pthpbq'
$go subim                  $copy Q image
     wait subim
     tget subim
          inclass 'pbcuvt'
          outclass 'pthpbu'
$go subim                  $copy U image
     wait subim
     task 'puth'
          inna una
          inclass 'pthpbi'
          inseq useq
          indi udi
          keyword 'CRPIX1'
          keyvalue keyval1
puthead                    $puthead I RA
          keyword 'CRPIX2'
          keyvalue keyval2
puthead                    $puthead I DEC
          pixxy 1025,1025
maxfit                     $check
     type 'should be: '
          inclass 'pthpbq'
          inseq useq
          indi udi
          keyword 'CRPIX1'
          keyvalue keyval1
$puthead                   $puthead Q RA
          keyword 'CRPIX2'
          keyvalue keyval2
$puthead                   $puthead Q DEC
          inclass 'pthpbu'
```

```
          inseq useq
          indi udi
          keyword 'CRPIX1'
          keyvalue keyval1
$puthead                  $puthead U RA
          keyword 'CRPIX2'
          keyvalue keyval2
$puthead                  $puthead U DEC
$================================================$
$        hgeom IQU images onto same grid         $
$================================================$
get 'mr_353_inputs'
     task 'hgeom'
          INNAME     una
          INCLASS    'pthpbi'
          INSEQ      useq
          INDISK     udi
          IN2NAME    '353W-X/L2   '
          IN2CLASS   'ZLCRST'
          IN2SEQ        2
          IN2DISK       3
          OUTNAME    una
          OUTCLASS   'hgmphi'
          OUTSEQ     useq
          OUTDISK    udi
          BLC           0
          TRC           0
          IMSIZE        0           0
          APARM         0           1
go hgeom                 $grid I image
     wait hgeom
     tget hgeom
          inclass 'pthpbq'
          outclass 'hgmphq'
$go hgeom                $grid Q image
     wait hgeom
     tget hgeom
          inclass 'pthpbu'
          outclass 'hgmphu'
$go hgeom                $grid U image
     wait hgeom
$================================================$
$             subim final IQU images             $
$================================================$
get 'mr_353_inputs'
     task 'subim'
          USERID        0
          INNAME     una
          INCLASS    'hgmphi'
          INSEQ      useq
          INDISK     udi
          OUTNAME    una
          OUTCLASS   'SBMH_I'
          OUTSEQ     useq
          OUTDISK    udi
          BLC         536         794
          TRC        1491        1361
          XINC          1
          YINC          1
```

```
          OPCODE     '    '
go subim                 $subim I image
     wait subim
     tget subim
          inclass 'hgmphq'
          outclass 'sbmh_q'
$go subim                 $subim Q image
     wait subim
     tget subim
          inclass 'hgmphu'
          outclass 'sbmh_u'
$go subim                 $subim U image
     wait subim
$#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#%#
```

From root Wed Oct 25 17:57:39 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["236" "Wed" "25" "October" "1995" "17:57:37" "EDT" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "20" "" "^From:" nil nil "10" nil nil nil nil]
      nil)
Received: from truchas.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA157382; Wed, 25 Oct 1995 17:57:38 -0400
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
      id AA04647; Wed, 25 Oct 95 17:57:37 EDT
Message-Id: <9510252157.AA04647@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Wed, 25 Oct 95 17:57:37 EDT

udi 4
ubdi 0
uvinna '353-L1-ABC'
uvincls 'XSC'
uvinseq 5
uvdi 4
uscrdi 4
una 'L1/X_1.3'
useq 1
ura = .0336
udec = 0
utpr 0
urng .75,0
uflux1 .055
uflux2 .008
vtniter 20
utniter 20
vnoise 7.32E-5
keyval1 1024, .4182
keyval2 1024, .9062

From mswain Wed Oct 25 18:06:48 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["545" "Wed" "25" "October" "1995" "18:06:47" "-0400" "Mark Swain" "mswain"
nil "12" "automated imaging run file" "^From:" nil nil "10" nil nil nil nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA193869; Wed, 25 Oct 1995 18:06:47 -0400
Message-Id: <9510252206.AA193869@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: automated imaging run file
Date: Wed, 25 Oct 1995 18:06:47 -0400

I have sent you two files. The first is an aips run file
for performing the automated final imaging sequence. The
second is a file which lists the inputs to the run file.
The inputs are for 1385 MHz with pseudo-X band sampeling
(inner u-v data removed to a the radius of the inner-most
8.4 GHz u-v data). Each frequency, resolution, and u-v
combination has it's own input file. At some point you
should give you a copy of all of them. The run files differ
for different resolutions. The one I sent you makes 1.3
arcsec FWHM images.

Mark

```
From root Fri Oct 27 19:10:59 1995
X-VM-v5-Data: ([nil nil nil t nil nil nil nil nil]
      ["14042" "Fri" "27" "October" "1995" "19:10:57" "EDT" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "490" "" "^From:" nil nil "10" nil
 nil nil nil]
      nil)
Received: from truchas.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA193763; Fri, 27 Oct 1995 19:10:58 -0400
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
      id AA05237; Fri, 27 Oct 95 19:10:57 EDT
Message-Id: <9510272310.AA05237@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Fri, 27 Oct 95 19:10:57 EDT

# ACE/gr parameter file
#
#
page 5
page inout 5
link page off
with g0
g0 on
g0 label off
g0 hidden false
g0 type xy
g0 autoscale type AUTO
g0 fixedpoint off
g0 fixedpoint type 0
g0 fixedpoint xy 0.000000, 0.000000
g0 fixedpoint format general general
g0 fixedpoint prec 6, 6
    default linestyle 1
    default linewidth 1
    default color 1
    default char size 1.000000
    default font 2
    default font source 0
    default symbol size 1.000000
    world xmin 0
    world xmax 45
    world ymin 0
    world ymax 3
    view xmin 0.150000
    view xmax 0.850000
    view ymin 0.150000
    view ymax 0.850000
    title "Measures of Jet Width at 8.4 GHz"
    title font 4
    title size 1.500000
    title color 1
    title linewidth 1
    subtitle ""
    subtitle font 4
    subtitle size 1.000000
    subtitle color 1
    subtitle linewidth 1
    s0 type xydy
    s0 symbol 2
```

```
s0 symbol size 1.000000
s0 symbol fill 2
s0 symbol center false
s0 symbol char 0
s0 skip 0
s0 linestyle 0
s0 linewidth 1
s0 color 1
s0 fill 0
s0 fill with color
s0 fill color 0
s0 fill pattern 0
s0 errorbar type BOTH
s0 errorbar length 1.000000
s0 errorbar linewidth 1
s0 errorbar linestyle 1
s0 errorbar riser on
s0 errorbar riser linewidth 1
s0 errorbar riser linestyle 1
s0 xyz 0.000000, 0.000000
s0 comment "Cols 1 2 3"
s1 type xydy
s1 symbol 2
s1 symbol size 1.000000
s1 symbol fill 1
s1 symbol center false
s1 symbol char 0
s1 skip 0
s1 linestyle 0
s1 linewidth 1
s1 color 1
s1 fill 0
s1 fill with color
s1 fill color 0
s1 fill pattern 0
s1 errorbar type BOTH
s1 errorbar length 1.000000
s1 errorbar linewidth 1
s1 errorbar linestyle 1
s1 errorbar riser on
s1 errorbar riser linewidth 1
s1 errorbar riser linestyle 1
s1 xyz 0.000000, 0.000000
s1 comment "Cols 1 6 7"
s2 type xydy
s2 symbol 5
s2 symbol size 1.000000
s2 symbol fill 2
s2 symbol center false
s2 symbol char 0
s2 skip 0
s2 linestyle 0
s2 linewidth 1
s2 color 1
s2 fill 0
s2 fill with color
s2 fill color 0
s2 fill pattern 0
s2 errorbar type BOTH
```

```
s2 errorbar length 1.000000
s2 errorbar linewidth 1
s2 errorbar linestyle 1
s2 errorbar riser on
s2 errorbar riser linewidth 1
s2 errorbar riser linestyle 1
s2 xyz 0.000000, 0.000000
s2 comment "Cols 1 2 3"
s3 type xydy
s3 symbol 5
s3 symbol size 1.000000
s3 symbol fill 1
s3 symbol center false
s3 symbol char 0
s3 skip 0
s3 linestyle 0
s3 linewidth 1
s3 color 1
s3 fill 0
s3 fill with color
s3 fill color 0
s3 fill pattern 0
s3 errorbar type BOTH
s3 errorbar length 1.000000
s3 errorbar linewidth 1
s3 errorbar linestyle 1
s3 errorbar riser on
s3 errorbar riser linewidth 1
s3 errorbar riser linestyle 1
s3 xyz 0.000000, 0.000000
s3 comment "Cols 1 10 11"
xaxis  tick on
xaxis  tick major 10
xaxis  tick minor 5
xaxis  tick offsetx 0.000000
xaxis  tick offsety 0.000000
xaxis  tick alt off
xaxis  tick min 0
xaxis  tick max 1
xaxis  label "kiloparsecs from central feature"
xaxis  label layout para
xaxis  label place auto
xaxis  label char size 1.190000
xaxis  label font 4
xaxis  label color 1
xaxis  label linewidth 1
xaxis  ticklabel on
xaxis  ticklabel type auto
xaxis  ticklabel prec 1
xaxis  ticklabel format decimal
xaxis  ticklabel layout horizontal
xaxis  ticklabel skip 0
xaxis  ticklabel stagger 0
xaxis  ticklabel op bottom
xaxis  ticklabel sign normal
xaxis  ticklabel start type auto
xaxis  ticklabel start 0.000000
xaxis  ticklabel stop type auto
xaxis  ticklabel stop 0.000000
```

```
xaxis  ticklabel char size 1.000000
xaxis  ticklabel font 4
xaxis  ticklabel color 1
xaxis  ticklabel linewidth 1
xaxis  tick major on
xaxis  tick minor on
xaxis  tick default 6
xaxis  tick in
xaxis  tick major color 1
xaxis  tick major linewidth 1
xaxis  tick major linestyle 1
xaxis  tick minor color 1
xaxis  tick minor linewidth 1
xaxis  tick minor linestyle 1
xaxis  tick log off
xaxis  tick size 1.000000
xaxis  tick minor size 0.500000
xaxis  bar off
xaxis  bar color 1
xaxis  bar linestyle 1
xaxis  bar linewidth 1
xaxis  tick major grid off
xaxis  tick minor grid off
xaxis  tick op both
xaxis  tick type auto
xaxis  tick spec 0
yaxis  tick on
yaxis  tick major 1
yaxis  tick minor 0.5
yaxis  tick offsetx 0.000000
yaxis  tick offsety 0.000000
yaxis  tick alt off
yaxis  tick min 0
yaxis  tick max 1
yaxis  label "jet width estimates (kpc)"
yaxis  label layout para
yaxis  label place auto
yaxis  label char size 1.190000
yaxis  label font 4
yaxis  label color 1
yaxis  label linewidth 1
yaxis  ticklabel on
yaxis  ticklabel type auto
yaxis  ticklabel prec 1
yaxis  ticklabel format decimal
yaxis  ticklabel layout horizontal
yaxis  ticklabel skip 0
yaxis  ticklabel stagger 0
yaxis  ticklabel op left
yaxis  ticklabel sign normal
yaxis  ticklabel start type auto
yaxis  ticklabel start 0.000000
yaxis  ticklabel stop type auto
yaxis  ticklabel stop 0.000000
yaxis  ticklabel char size 1.000000
yaxis  ticklabel font 4
yaxis  ticklabel color 1
yaxis  ticklabel linewidth 1
yaxis  tick major on
```

```
yaxis  tick minor on
yaxis  tick default 6
yaxis  tick in
yaxis  tick major color 1
yaxis  tick major linewidth 1
yaxis  tick major linestyle 1
yaxis  tick minor color 1
yaxis  tick minor linewidth 1
yaxis  tick minor linestyle 1
yaxis  tick log off
yaxis  tick size 1.000000
yaxis  tick minor size 0.500000
yaxis  bar off
yaxis  bar color 1
yaxis  bar linestyle 1
yaxis  bar linewidth 1
yaxis  tick major grid off
yaxis  tick minor grid off
yaxis  tick op both
yaxis  tick type auto
yaxis  tick spec 0
altxaxis  tick on
altxaxis  tick major 0.5
altxaxis  tick minor 0.25
altxaxis  tick offsetx 0.000000
altxaxis  tick offsety 0.000000
altxaxis  tick alt off
altxaxis  tick min 0
altxaxis  tick max 1
altxaxis  label ""
altxaxis  label layout para
altxaxis  label place auto
altxaxis  label char size 1.000000
altxaxis  label font 4
altxaxis  label color 1
altxaxis  label linewidth 1
altxaxis  ticklabel off
altxaxis  ticklabel type auto
altxaxis  ticklabel prec 1
altxaxis  ticklabel format decimal
altxaxis  ticklabel layout horizontal
altxaxis  ticklabel skip 0
altxaxis  ticklabel stagger 0
altxaxis  ticklabel op bottom
altxaxis  ticklabel sign normal
altxaxis  ticklabel start type auto
altxaxis  ticklabel start 0.000000
altxaxis  ticklabel stop type auto
altxaxis  ticklabel stop 0.000000
altxaxis  ticklabel char size 1.000000
altxaxis  ticklabel font 4
altxaxis  ticklabel color 1
altxaxis  ticklabel linewidth 1
altxaxis  tick major off
altxaxis  tick minor on
altxaxis  tick default 6
altxaxis  tick in
altxaxis  tick major color 1
altxaxis  tick major linewidth 1
```

```
altxaxis  tick major linestyle 1
altxaxis  tick minor color 1
altxaxis  tick minor linewidth 1
altxaxis  tick minor linestyle 1
altxaxis  tick log off
altxaxis  tick size 1.000000
altxaxis  tick minor size 0.500000
altxaxis  bar off
altxaxis  bar color 1
altxaxis  bar linestyle 1
altxaxis  bar linewidth 1
altxaxis  tick major grid off
altxaxis  tick minor grid off
altxaxis  tick op both
altxaxis  tick type auto
altxaxis  tick spec 0
altyaxis  tick on
altyaxis  tick major 0.5
altyaxis  tick minor 0.25
altyaxis  tick offsetx 0.000000
altyaxis  tick offsety 0.000000
altyaxis  tick alt off
altyaxis  tick min 0
altyaxis  tick max 1
altyaxis  label ""
altyaxis  label layout para
altyaxis  label place auto
altyaxis  label char size 1.000000
altyaxis  label font 4
altyaxis  label color 1
altyaxis  label linewidth 1
altyaxis  ticklabel off
altyaxis  ticklabel type auto
altyaxis  ticklabel prec 1
altyaxis  ticklabel format decimal
altyaxis  ticklabel layout horizontal
altyaxis  ticklabel skip 0
altyaxis  ticklabel stagger 0
altyaxis  ticklabel op left
altyaxis  ticklabel sign normal
altyaxis  ticklabel start type auto
altyaxis  ticklabel start 0.000000
altyaxis  ticklabel stop type auto
altyaxis  ticklabel stop 0.000000
altyaxis  ticklabel char size 1.000000
altyaxis  ticklabel font 4
altyaxis  ticklabel color 1
altyaxis  ticklabel linewidth 1
altyaxis  tick major off
altyaxis  tick minor on
altyaxis  tick default 6
altyaxis  tick in
altyaxis  tick major color 1
altyaxis  tick major linewidth 1
altyaxis  tick major linestyle 1
altyaxis  tick minor color 1
altyaxis  tick minor linewidth 1
altyaxis  tick minor linestyle 1
altyaxis  tick log off
```

```
  altyaxis  tick size 1.000000
  altyaxis  tick minor size 0.500000
  altyaxis  bar off
  altyaxis  bar color 1
  altyaxis  bar linestyle 1
  altyaxis  bar linewidth 1
  altyaxis
tick major grid off
  altyaxis  tick minor grid off
  altyaxis  tick op both
  altyaxis  tick type auto
  altyaxis  tick spec 0
  zeroxaxis  tick on
  zeroxaxis  tick major 10
  zeroxaxis  tick minor 5
  zeroxaxis  tick offsetx 0.000000
  zeroxaxis  tick offsety 0.000000
  zeroxaxis  tick alt off
  zeroxaxis  tick min 0
  zeroxaxis  tick max 1
  zeroxaxis  label ""
  zeroxaxis  label layout para
  zeroxaxis  label place auto
  zeroxaxis  label char size 1.000000
  zeroxaxis  label font 4
  zeroxaxis  label color 1
  zeroxaxis  label linewidth 1
  zeroxaxis  ticklabel off
  zeroxaxis  ticklabel type auto
  zeroxaxis  ticklabel prec 1
  zeroxaxis  ticklabel format decimal
  zeroxaxis  ticklabel layout horizontal
  zeroxaxis  ticklabel skip 0
  zeroxaxis  ticklabel stagger 0
  zeroxaxis  ticklabel op bottom
  zeroxaxis  ticklabel sign normal
  zeroxaxis  ticklabel start type auto
  zeroxaxis  ticklabel start 0.000000
  zeroxaxis  ticklabel stop type auto
  zeroxaxis  ticklabel stop 0.000000
  zeroxaxis  ticklabel char size 1.000000
  zeroxaxis  ticklabel font 4
  zeroxaxis  ticklabel color 1
  zeroxaxis  ticklabel linewidth 1
  zeroxaxis  tick major off
  zeroxaxis  tick minor on
  zeroxaxis  tick default 6
  zeroxaxis  tick in
  zeroxaxis  tick major color 1
  zeroxaxis  tick major linewidth 1
  zeroxaxis  tick major linestyle 1
  zeroxaxis  tick minor color 1
  zeroxaxis  tick minor linewidth 1
  zeroxaxis  tick minor linestyle 1
  zeroxaxis  tick log off
  zeroxaxis  tick size 1.000000
  zeroxaxis  tick minor size 0.500000
  zeroxaxis  bar off
  zeroxaxis  bar color 1
```

```
zeroxaxis  bar linestyle 1
zeroxaxis  bar linewidth 1
zeroxaxis  tick major grid off
zeroxaxis  tick minor grid off
zeroxaxis  tick op both
zeroxaxis  tick type auto
zeroxaxis  tick spec 0
zeroyaxis  tick on
zeroyaxis  tick major 1
zeroyaxis  tick minor 0.5
zeroyaxis  tick offsetx 0.000000
zeroyaxis  tick offsety 0.000000
zeroyaxis  tick alt off
zeroyaxis  tick min 0
zeroyaxis  tick max 1
zeroyaxis  label ""
zeroyaxis  label layout para
zeroyaxis  label place auto
zeroyaxis  label char size 1.000000
zeroyaxis  label font 4
zeroyaxis  label color 1
zeroyaxis  label linewidth 1
zeroyaxis  ticklabel off
zeroyaxis  ticklabel type auto
zeroyaxis  ticklabel prec 1
zeroyaxis  ticklabel format decimal
zeroyaxis  ticklabel layout horizontal
zeroyaxis  ticklabel skip 0
zeroyaxis  ticklabel stagger 0
zeroyaxis  ticklabel op left
zeroyaxis  ticklabel sign normal
zeroyaxis  ticklabel start type auto
zeroyaxis  ticklabel start 0.000000
zeroyaxis  ticklabel stop type auto
zeroyaxis  ticklabel stop 0.000000
zeroyaxis  ticklabel char size 1.000000
zeroyaxis  ticklabel font 4
zeroyaxis  ticklabel color 1
zeroyaxis  ticklabel linewidth 1
zeroyaxis  tick major off
zeroyaxis  tick minor on
zeroyaxis  tick default 6
zeroyaxis  tick in
zeroyaxis  tick major color 1
zeroyaxis  tick major linewidth 1
zeroyaxis  tick major linestyle 1
zeroyaxis  tick minor color 1
zeroyaxis  tick minor linewidth 1
zeroyaxis  tick minor linestyle 1
zeroyaxis  tick log off
zeroyaxis  tick size 1.000000
zeroyaxis  tick minor size 0.500000
zeroyaxis  bar off
zeroyaxis  bar color 1
zeroyaxis  bar linestyle 1
zeroyaxis  bar linewidth 1
zeroyaxis  tick major grid off
zeroyaxis  tick minor grid off
zeroyaxis  tick op both
```

```
zeroyaxis  tick type auto
zeroyaxis  tick spec 0
legend on
legend loctype view
legend layout 0
legend vgap 2
legend hgap 1
legend length 4
legend box off
legend box fill off
legend box fill with color
legend box fill color 0
legend box fill pattern 1
legend box color 1
legend box linewidth 1
legend box linestyle 1
legend x1 0.43
legend y1 0.3
legend font 4
legend char size 0.800000
legend linestyle 1
legend linewidth 1
legend color 1
legend string 0 "3 \8s\4 isophote separation (0.\b"44 FWHM)"
legend string 1 "equivalent rectangular width (1.\b"3 FWHM)"
legend string 2 "rail separation (1.\b3 FWHM)"
legend string 3 "Gaussian FWHM (1.\b3 FWHM)"
frame on
frame type 0
frame linestyle 1
frame linewidth 1
frame color 1
frame fill off
frame background color 0
```

From root Fri Oct 27 19:11:34 1995
X-VM-v5-Data: ([nil nil nil t nil nil nil nil nil]
["766" "Fri" "27" "October" "1995" "19:11:33" "EDT" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "14" "" "^From:" nil nil "10" nil nil nil nil]
nil)
Received: from truchas.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA184295; Fri, 27 Oct 1995 19:11:34 -0400
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
id AA05244; Fri, 27 Oct 95 19:11:33 EDT
Message-Id: <9510272311.AA05244@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Fri, 27 Oct 95 19:11:33 EDT

									FWHM		"J, trans"	
dist	3sI	3ser	5sI	5ser	eq W	eWer	SBLsp	er	1 Gs	+/-	int.flx	er
kpc	kpc	kpc	kpc	kpc	kpc	kpc	kpc	kpc	kpc	kpc	mJy	mJy
9	1.77	0.05	1.39	0.31	2.14	0.59	1.88	0.11	1.61	0.021	2.14	0.46
12	1.88	0.12	1.58	0.07	1.29	0.07	1.05	0.08	1.15	0.004	14.4	0.7
15	2.41	0.07	0	0.04	1.31	0.16	1.05	0.08	1.28	0.035	2.75	0.22
18	1.2	0.27	0	0.04	1.22	1.13	0	0.08	0.65	0.085	0.65	0.51
21	1.69	0.09	1.39	0.09	1.52	0.16	1.5	0.08	1.36	0.021	2.82	0.12
24	2.03	0.04	1.58	0.07	1.92	0.24	1.65	0.13	1.79	0.028	3.07	0.17
27	1.96	0.07	1.8	0.07	1.68	0.18	1.8	0.08	1.57	0.007	6.24	0.5
30	2.14	0.05	2.03	0.04	1.53	0.36	2.03	0.11	1.79	0.014	5.56	1.27
33	2.29	0.05	2.14	0.05	1.77	0.14	1.5	0.13	1.61	0.007	10.3	0.64
36	2.22	0.05	1.92	0.05	1.49	0.02	1.43	0.11	1.36	0.007	22.6	0.06

From root Fri Oct 27 19:12:14 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil nil]
["691" "Fri" "27" "October" "1995" "19:12:13" "EDT" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "24" "" "^From:" nil nil "10" nil nil nil nil]
nil)
Received: from truchas.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA195051; Fri, 27 Oct 1995 19:12:14 -0400
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
id AA05254; Fri, 27 Oct 95 19:12:13 EDT
Message-Id: <9510272312.AA05254@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Fri, 27 Oct 95 19:12:13 EDT

dist	X rail seperation width			L rail seperation width		
kpc	kpc	er	*	kpc	er	* interval of jet in kpc
12.6	0	0	0.61	1.35	0.17	
13.2	1.2	0.13	0.61	1.05	0.13	
15.6	0	0	0.61	1.35	0.13	
18	0	0	0.61	1.28	0.15	
20.5	1.58	0.16	0.61	0	0	
21.7	1.35	0.13	0.61	1.28	0.16	
22.3	0	0	0.61	1.2	0.13	
22.9	1.13	0.16	0.61	1.13	0.16	
23.5	0	0	0.61	1.5	0.13	
24.1	0	0	0.61	1.73	0.15	
25.9	1.8	0.13	0.61	0	0	
26.5	0	0	0.61	1.35	0.13	
28.3	0	0	0.61	1.35	0.13	
29.5	1.73	0.16	0.61	0	0	
32.5	2.03	0.16	0.61	0	0	
34.3	0	0	0.61	1.43	0.16	
34.9	1.43	0.16	0.61	0	0	
35.5	1.96	0.13	0.61	0	0	
36.1	1.65	0.13	0.61	1.65	0.13	
36.7	1.58	0.15	0.61	1.5	0.13	

From root Sat Oct 28 21:17:57 1995
X-VM-v5-Data: ([nil nil nil t nil nil nil nil nil]
["573" "Sat" "28" "October" "1995" "21:17:56" "EDT" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "20" "" "^From:" nil nil "10" nil nil nil nil]
nil)
Received: from truchas.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA188068; Sat, 28 Oct 1995 21:17:57 -0400
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
id AA05661; Sat, 28 Oct 95 21:17:56 EDT
Message-Id: <9510290117.AA05661@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Sat, 28 Oct 95 21:17:56 EDT

11.4	0	0	0.61	1.35	0.17
12	1.2	0.13	0.61	1.05	0.13
14.4	0	0	0.61	1.35	0.13
16.8	0	0	0.61	1.28	0.15
19.3	1.58	0.16	0.61	0	0
20.5	1.35	0.13	0.61	1.28	0.16
21.1	0	0	0.61	1.2	0.13
21.7	1.13	0.16	0.61	1.13	0.16
22.3	0	0	0.61	1.5	0.13
22.9	0	0	0.61	1.73	0.15
24.7	1.8	0.13	0.61	0	0
25.3	0	0	0.61	1.35	0.13
27.1	0	0	0.61	1.35	0.13
28.3	1.73	0.16	0.61	0	0
31.3	2.03	0.16	0.61	0	0
33.1	0	0	0.61	1.43	0.16
33.7	1.43	0.16	0.61	0	0
34.3	1.96	0.13	0.61	0	0
34.9	1.65	0.13	0.61	1.65	0.13
35.5	1.58	0.15	0.61	1.5	0.13

From root Tue Oct 31 10:56:43 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil nil]
["1171" "Tue" "31" "October" "1995" "10:56:42" "EST" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "18" "" "^From:" nil nil "10" nil nil nil nil]
nil)
Received: from truchas.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA108547; Tue, 31 Oct 1995 10:56:42 -0500
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
id AA06835; Tue, 31 Oct 95 10:56:42 EST
Message-Id: <9510311556.AA06835@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Tue, 31 Oct 95 10:56:42 EST

1.3 0.4 lin fit 2 or 3 ord fit
peak peak jet integrated flux
postn of Sobel inten. max "1 Gaus, X, 1.3"

ch ch S 3 sig pos S 3 sig pos
"of Jet, two dif. fits" 1.3 arcsec
Speak alt Npeak alt FWHM er
N 3 sig pos N 3
sig pos fit 1 fit 2 lin fit 2or 3 ord fit
arcsec

pix pix

5 9 12 23
-0.00147
FWHM "J, trans"

dist	3sI	3ser	5sI	5ser	eq W	eWer	SBLsp	er	1 Gs	+/-	int.flx	er
kpc	kpc	kpc	kpc	kpc	kpc	kpc	kpc	kpc	kpc	kpc	mJy	mJy
9	1.77	0.05	1.39	0.31	2.14	0.59	1.88	0.11	1.6	0.052	2.14	0.46
12	1.88	0.12	1.58	0.07	1.29	0.07	1.05	0.08	1.15	0.018	14.4	0.7
15	2.41	0.07	0	0.04	1.31	0.16	1.05	0.08	1.23	0.05	2.75	0.22
18	1.2	0.27	0	0.04	1.22	1.13	0	0.08	1.28	0.355	0.65	0.51
21	1.69	0.09	1.39	0.09	1.52	0.16	1.5	0.08	1.39	0.044	2.82	0.12
24	2.03	0.04	1.58	0.07	1.92	0.24	1.65	0.13	1.76	0.053	3.07	0.17
27	1.96	0.07	1.8	0.07	1.68	0.18	1.8	0.08	1.52	0.046	6.24	
0.5												
30	2.14	0.05	2.03	0.04	1.53	0.36	2.03	0.11	1.79	0.035	5.56	1.27
33	2.29	0.05	2.14	0.05	1.77	0.14	1.5	0.13	1.65	0.036	10.3	0.64
36	2.22	0.05	1.92	0.05	1.49	0.02	1.43	0.11	1.36	0.017	22.6	0.06

From root Mon Nov 6 09:57:11 1995
X-VM-v5-Data: ([nil nil nil t nil nil nil nil nil]
      ["781" "Mon" "6" "November" "1995" "09:57:10" "EST" "Mark Swain"
"mswain@truchas.cv.nrao.edu" nil "14" "" "^From:" nil nil "11" nil nil (number " "
mark " F   Mark Swain   Nov 6   14/781   " thread-indent "\"\"\n") nil]
      nil)
Received: from truchas.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA122168; Mon, 6 Nov 1995 09:57:10 -0500
Received: by truchas.cv.nrao.edu (4.1/DDN-CV/1.8)
      id AA08858; Mon, 6 Nov 95 09:57:10 EST
Message-Id: <9511061457.AA08858@truchas.cv.nrao.edu>
From: mswain@truchas.cv.nrao.edu (Mark Swain)
To: abridle
Date: Mon, 6 Nov 95 09:57:10 EST

dist kpc	3sI kpc	3ser kpc	5sI kpc	5ser kpc	eq W kpc	eWer kpc	SBLsp kpc	er kpc	FWHM 1 Gs kpc	+/- kpc	"J, trans" int.flx mJy	er mJy
9.02	1.77	0.05	1.39	0.31	2.14	0.59	1.88	0.11	1.6	0.055	2.14	0.46
12.0	1.88	0.12	1.58	0.07	1.29	0.07	1.05	0.08	1.15	0.015	14.4	0.7
15	2.41	0.07	0	0.04	1.31	0.16	1.05	0.08	1.23	0.105	2.75	0.22
18	1.2	0.27	0	0.04	1.22	1.13	0	0.08	1.28	1.292	0.65	0.51
21.1	1.69	0.09	1.39	0.09	1.52	0.16	1.5	0.08	1.39	0.059	2.82	0.12
24.1	2.03	0.04	1.58	0.07	1.92	0.24	1.65	0.13	1.76	0.082	3.07	0.17
27.1	1.96	0.07	1.8	0.07	1.68	0.18	1.8	0.08	1.52	0.099	6.24	0.5
30.1	2.14	0.05	2.03	0.04	1.53	0.36	2.03	0.11	1.79	0.035	5.56	1.27
33.1	2.29	0.05	2.14	0.05	1.77	0.14	1.5	0.13	1.65	0.09	10.3	0.64
36.1	2.22	0.05	1.92	0.05	1.49	0.02	1.43	0.11	1.36	0.016	22.6	0.06

From mswain Tue Nov 7 10:34:00 1995
X-VM-v5-Data: ([nil nil nil t nil nil nil nil nil]
      ["393" "Tue" "7" "November" "1995" "10:33:59" "-0500" "Mark Swain" "mswain"
nil "13" "Jet-Sheath relationship data" "^From:" nil nil "11" nil nil (number " "
mark " F   Mark Swain   Nov 7   13/393   " thread-indent "\"Jet-Sheath
relationship data\"\n") nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA142106; Tue, 7 Nov 1995 10:33:59 -0500
Message-Id: <9511071533.AA142106@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: Jet-Sheath relationship data
Date: Tue, 7 Nov 1995 10:33:59 -0500

12 regions along jet (units of flux are mJy;dist units kpc)

dist	CocFlx	CFer	JF	JFer
9.024	7.782	1.649	2.136	0.463
12.03	13.011	0.599	14.406	0.696
15.04	9.327	1.180	2.752	0.224
18.05	9.834	0.831	0.649	0.513
21.06	9.353	0.412	2.822	0.121
24.06	0.237	2.570	3.069	0.172
27.07	10.414	3.460	6.240	0.501
30.08	15.514	6.303	5.556	1.267
33.09	22.164	4.293	10.341	0.640
36.1	19.792	1.733	22.573	0.063

From mswain Wed Nov 8 10:12:06 1995
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["159" "Wed" "8" "November" "1995" "10:12:06" "-0500" "Mark Swain" "mswain"
"<9511081512.AA190819@polaris.cv.nrao.edu>" "8" "arrows in ps files" "^From:" nil
nil "11" nil nil nil nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA190819; Wed, 8 Nov 1995 10:12:06 -0500
Message-Id: <9511081512.AA190819@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: arrows in ps files
Date: Wed, 8 Nov 1995 10:12:06 -0500

Alan,

I seem to have misplaced your instructuions
for making arrors in post scrpit files. Would
you mind sending me another example of how to do
that?

Mark

```
From abridle Wed Nov  8 10:37:02 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["98155" "Wed" "8" "November" "1995" "10:37:00" "-0500" "Alan Bridle"
"abridle" nil "3423" "Re: arrows in ps files" "^From:" nil nil "11" nil nil nil
nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA183305; Wed, 8 Nov 1995 10:37:00 -0500
Message-Id: <9511081537.AA183305@polaris.cv.nrao.edu>
In-Reply-To: <9511081512.AA190819@polaris.cv.nrao.edu>
References: <9511081512.AA190819@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: arrows in ps files
Date: Wed, 8 Nov 1995 10:37:00 -0500


Mark Swain writes:
 > Alan,
 >
 > I seem to have misplaced your instructuions
 > for making arrors in post scrpit files.  Would
 > you mind sending me another example of how to do
 > that?
 >
 > Mark

Macros are near start, usage near end, of this file:

============================================================================

%!PS-Adobe-3.0 EPSF-3.0
%%Creator: AIPS task LWPLA
%%CreationDate: 94/JUL/18 13:42:48
%%Title: AIPS plot
%%Pages: 1
%%DocumentFonts: Helvetica
%%BoundingBox:      37     18    574    774
%%For: AIPS user number     76
%%EndComments
%%BeginProcSet: lwpla.pro
   /m {moveto} def
   /v {lineto currentpoint stroke moveto} def
   /c {rmoveto gsave currentpoint translate rotate 0 setgray
       14 0 32 4 -1 roll widthshow grestore} def
   /g {save hafpix hafpiy rmoveto currentpoint translate
       pscalx pscaly scale
       {0.4961 sub -2.7274 mul} settransfer
       npix 1 8 [npix 0 0 1 0 0] {currentfile npix string readstring pop} image
       restore} def
   /x {-50 -50 rmoveto 100 100 rlineto 0 -100 rmoveto -100 100 rlineto} def

   /arrowdict 14 dict def
   arrowdict begin
      /mtrx matrix def
      end

   /arrow {arrowdict begin
      /hdl exch def /hht exch 2 div def
```

```
      /ht exch 2 div def
      /y2 exch def  /x2 exch def
      /y1 exch def  /x1 exch def
      /dx x2 x1 sub def
      /dy y2 y1 sub def
      /arrlng dx dx mul dy dy mul add sqrt def
      /angle dy dx atan def
      /base arrlng hdl sub def
      /savematrix mtrx currentmatrix def
      x1 y1 translate
      angle rotate
      0 ht neg moveto
      base ht neg lineto
      base hht neg lineto
      arrlng 0 lineto
      base hht lineto
      base ht lineto
      0 ht lineto
      closepath
      savematrix setmatrix
      end} def


%%EndProcSet
%                Dots       BoundingBox
%             (1/300 inch)   (1/72 inch)
%Frame BLC:    599    540    143    129
%Frame TRC:   2378   3023    570    725
%%EndProlog
userdict /start-hook known {start-hook} if
%%Page: 1 1
userdict /bop-hook known {bop-hook} if
/vmsave save def
72 300 div dup scale
1 setlinejoin 1 setlinecap
  2 setlinewidth
/Helvetica findfont 58 scalefont setfont
newpath gsave
    1    1 m  599  540 m 2378  540 v 2378 3023 v  599 3023 v  599  540 v
/Helvetica findfont 60 scalefont setfont
  599 3023 m
% 3C288     IPOL   8339.900 MHZ   3C288_XHIRES.RSTOR.1
(3C288           8.34 GHz        Total Intensity, 0.1" FWHM)   0     0    29 c
  599 3023 m
()   0     0   116 c
  599  540 m
()   0     0  -203 c
  599  540 m
% Levs =  3.0000E-05 * (  -1.00, 1.000, 2.000,
()   0     0  -261 c
  599  540 m
()   0     0  -319 c
  599  540 m
()   0     0  -377 c
  599  540 m
%  120.0)
()   0     0  -435 c
  599 1782 m
(Declination [B1950])
```

```
   90  -367  -323 c
 1489  540 m
(Right Ascension [B1950])
    0  -391  -165 c
/Helvetica findfont 58 scalefont setfont
  703  540 m
  703  593 m  703  540 v
  703  540 m
( 13 36 38.70)   0  -357   -87 c
 1082  540 m
 1082  593 m 1082  540 v
 1082  540 m
( 38.65)   0  -153   -87 c
 1461  540 m
 1461  593 m 1461  540 v
 1461  540 m
( 38.60)   0  -153   -87 c
 1841  540 m
 1841  593 m 1841  540 v
 1841  540 m
( 38.55)   0  -153   -87 c
 2220  540 m
 2220  593 m 2220  540 v
 2220  540 m
( 38.50)   0  -153   -87 c
  703 2970 m  703 3023 v
 1082 2970 m 1082 3023 v
 1461 2970 m 1461 3023 v
 1841 2970 m 1841 3023 v
 2220 2970 m 2220 3023 v
  599 2805 m
  652 2805 m  599 2805 v
  599 2805 m
(39 06 24.0)   0  -357   -29 c
  599 2480 m
  652 2480 m  599 2480 v
  599 2480 m
(23.5)   0  -153   -29 c
  599 2154 m
  652 2154 m  599 2154 v
  599 2154 m
(23.0)   0  -153   -29 c
  599 1828 m
  652 1828 m  599 1828 v
  599 1828 m
(22.5)   0  -153   -29 c
  599 1502 m
  652 1502 m  599 1502 v
  599 1502 m
(22.0)   0  -153   -29 c
  599 1176 m
  652 1176 m  599 1176 v
  599 1176 m
(21.5)   0  -153   -29 c
  599  850 m
  652  850 m  599  850 v
  599  850 m
(21.0)   0  -153   -29 c
 2325 2805 m 2378 2805 v
```

```
2325 2480 m 2378 2480 v
2325 2154 m 2378 2154 v
2325 1828 m 2378 1828 v
2325 1502 m 2378 1502 v
2325 1176 m 2378 1176 v
2325  850 m 2378  850 v
 613  554 m  608  560 v
 613  554 m  619  547 v  621  543 v  623  540 v
 715  559 m  715  560 v
 715  559 m  716  557 v  722  546 v  727  540 v
 848  554 m  846  560 v
 848  554 m  853  547 v  856  543 v  861  540 v
1102  554 m 1098  560 v
1102  554 m 1107  540 v 1107  540 v 1107  540 v
1197  551 m 1193  560 v
1197  551 m 1201  540 v
1273  549 m 1270  560 v
1273  549 m 1277  540 v
1398  557 m 1397  560 v
1398  557 m 1401  553 v 1405  545 v 1409  540 v
1541  544 m 1541  560 v
1541  544 m 1542  540 v
1587  551 m 1583  560 v
1587  551 m 1592  540 v
1625  560 m 1620  544 v 1619  540 v
1819  560 m 1817  545 v 1816  540 v
2045  540 m 2046  544 v 2048  542 v 2065  543 v 2066  541 v 2069  540 v
2195  560 m 2188  545 v 2188  540 v
2319  559 m 2319  560 v
2319  559 m 2320  558 v 2324  544 v 2327  540 v
 606  567 m  604  579 v
 606  567 m  608  560 v
 708  571 m  705  579 v
 708  571 m  715  560 v
 775  579 m  774  579 v
 775  579 m  775  579 v  776  579 v
 843  569 m  842  579 v
 843  569 m  846  560 v
1082  574 m 1070  579 v
1082  574 m 1088  570 v 1094  565 v 1098  560 v
1192  566 m 1190  579 v
1192  566 m 1193  560 v
1263  579 m 1263  579 v
1263  579 m 1264  578 v 1268  564 v 1270  560 v
1395  573 m 1394  579 v
1395  573 m 1397  560 v
1541  579 m 1541  563 v 1541  560 v
1585  579 m 1584  567 v 1583  560 v
1622  566 m 1618  579 v
1622  566 m 1625  560 v
1809  577 m 1808  579 v
1809  577 m 1811  572 v 1816  564 v 1819  560 v
2195  560 m 2202  570 v 2207  579 v
2313  573 m 2311  579 v
2313  573 m 2319  560 v
 613  599 m  608  588 v  604  579 v
 702  585 m  697  599 v
 702  585 m  705  579 v
 749  593 m  745  599 v
```

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 749  593 m  755  586 v  760  584 v  774  579 v
 795  592 m  776  579
v
 798  599 m  795  592 v
 843  599 m  841  587 v  842  579 v
1003  592 m 1001  599 v
1003  592 m 1010  589 v 1015  585 v 1029  583 v 1033  583 v 1049  583 v
1052  582 v 1068  580 v 1069  580 v 1070  579 v
1189  583 m 1188  599 v
1189  583 m 1190  579 v
1259  594 m 1259  599 v
1259  594 m 1263  579 v
1398  599 m 1398  596 v 1394  579 v
1541  599 m 1541  583 v 1541  579 v
1585  579 m 1596  593 v 1604  587 v 1616  582 v 1617  580 v 1618  579 v
1789  596 m 1787  599 v
1789  596 m 1792  593 v 1799  586 v 1808  579 v
2207  579 m 2222  594 v 2227  599 v
2308  587 m 2301  599 v
2308  587 m 2311  579 v
 613  599 m  619  605 v  629  618 v
 690  612 m  687  618 v
 690  612 m  697  600 v  697  599 v  697  599 v
 733  615 m  732  618 v
 733  615 m  736  610 v  741  603 v  745  599 v
 811  618 m  805  609 v  798  599 v
 849  618 m  847  612 v  843  599 v
 999  618 m  999  607 v 1001  599 v
1188  601 m 1186  618 v
1188  601 m 1188  599 v
1261  618 m 1261  615 v 1259  599 v
1398  599 m 1401  604 v 1408  618 v
1542  603 m 1542  618 v
1541  599 m 1542  603 v
1653  616 m 1651  618 v
1653  616 m 1655  615 v 1668  612 v 1674  609 v 1691  615 v 1694  616 v
1697  618 v
1767  613 m 1761  618 v
1767  613 m 1772  610 v 1778  605 v 1787  599 v
2241  605 m 2227  599 v
2241  605 m 2249  607 v 2261  609 v 2272  609 v 2280  609 v 2289  607 v
2300  600 v 2300  599 v 2301  599 v
 629  618 m  638  630 v  648  638 v
 684  625 m  678  638 v
 684  625 m  687  618 v
 727  629 m  724  638 v
 727  629 m  732  618 v
 814  621 m  811  618 v
 827  638 m  814  621 v
 849  618 m  853  624 v  862  638 v
1002  638 m 1001  629 v  999  618 v
1182  634 m 1182  638 v
1182  634 m 1186  619 v 1186  618 v 1186  618 v
1261  618 m 1264  623 v 1270  638 v
1420  638 m 1419  637 v 1408  618 v
1543  624 m 1543  638 v
1542  618 m 1543  624 v
1631  633 m 1625  638 v
1631  633 m 1635  629 v 1642  625 v 1651  618 v
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1713 631 m 1697 618 v
1713 631 m 1729 633 v 1733 635 v 1743 628 v 1753 625 v 1756 622 v
1761 618 v
2022 634 m 2019 638 v
2022 634 m 2026 623 v 2036 638 v
 648 638 m 658 649 v 666 646 v 677 639 v 678 638 v 678 638 v
 722 643 m 719 657 v
 722 643 m 724 638 v
 754 656 m 753 657 v
 754 656 m 755 654 v 763 646 v 775 641 v 778 641 v 795 646 v
 812 657 v
 834 644 m 827 638 v
 847 657 m 834 644 v
 862 638 m 873 648 v 882 657 v
1007 657 m 1006 654 v 1002 638 v
1178 650 m 1176 657 v
1178 650 m 1182 638 v
1283 657 m 1282 656 v 1270 638 v
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1549 657 m 1547 648 v 1543 638 v
1609 651 m 1600 657 v
1609 651 m 1616 646 v 1620 642 v 1625 638 v
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2019 638 m 2022 653 v
2033 645 m 2030 657 v
2033 645 m 2036 638 v
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 718 659 m 719 657 v
 748 670 m 747 677 v
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 853 662 m 847 657 v
 853 662 m 872 677 v
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 892 665 m 909 677 v
1007 657 m 1010 671 v 1012 677 v
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1174 665 m 1176 657 v
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1425 662 m 1420 677 v
1425 662 m 1426 657 v
1549 657 m 1557 665 v 1565 665 v 1577 668 v 1584 664 v 1596 660 v
1598 659 v 1600 657 v
2026 660 m 2022 657 v
2028 659 m 2026 660 v
2028 659 m 2030 657 v
 720 696 m 717 678 v 717 677 v
 747 696 m 746 687 v 747 677 v
 784 686 m 776 696 v
 784 686 m 795 683 v 799 682 v 814 685 v 826 688 v 834 692 v
 842 696 v
 853 683 m 842 677 v
 853 683 m 872 696 v
 873 677 m 872 677 v
 873 696 m 872 696 v
 873 677 m 874 678 v
 873 696 m 873 696 v
 892 690 m 874 678 v

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 912  679 m  909  677 v
 912  679 m  917  682 v  931  689 v  947  696 v
1014  682 m 1013  696 v
1012  677 m 1014  682 v
1170  681 m 1168  696 v
1170  681 m 1171  677 v
1299  677 m 1303  683 v 1316  696 v
1397  692 m 1388  696 v
1397  692 m 1401  691 v 1409  685 v 1420  677 v 1420  677 v 1420  677 v
 654  712 m  651  716 v
 654  712 m  658  706 v  666  705 v  677  706 v  683  716 v
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 749  716 m  747  708 v  747  696 v
 772  716 m  772  713 v  775  700 v  776  697 v  776  696 v
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 853  701 m  863  707 v  873  712 v  879  716 v
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 892  709 m  902  716 v
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 912  704 m  928  716 v
 951  698 m  947  696 v
 951  698 m  955  701 v  970  704 v  982  708 v  990  706 v 1002  708 v
1010  700 v 1013  700 v 1013  696 v
1168  698 m 1167  716 v
1168  696 m 1168  698 v
1316  696 m 1322  708 v 1338  712 v 1342  713 v 1353  708 v 1361  707 v
1368  703 v 1381  700 v 1383  698 v 1388  696 v
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 637  734 m  638  732 v  645  723 v  651  716 v
 683  716 m  697  731 v  699  736 v
 731  736 m  729  728 v  725  716 v
 753  736 m  752  732 v  749  716 v
 771  736 m  771  731 v  772  716 v
 827  729 m  815  736 v
 827  729 m  834  729 v  848  730 v  853  731 v  862  736 v
 892  724 m  879  716 v
 892  724 m  906  736 v
 912  723 m  902  716 v
 912  723 m  926  736 v
 931  719 m  928  716 v
 931  719 m  949  734 v  951  735 v  951  736 v
1168  736 m 1167  717 v 1167  716 v
 629  746 m  624  755 v
 629  746 m  636  736 v
 710  755 m  702  741 v  699  736 v
 731  736 m  736  748 v  738  755 v
 753  736 m  755  747 v  757  755 v
 773  755 m  772  752 v  771  736 v
 805  746 m  803  755 v
 805  746 m  814  736 v  814  736 v  815  736 v
 873  740 m  862  736 v
 873  740 m  884  746 v  892  752 v  896  755 v
 912  740 m  906  736 v
 912  740 m  928  755 v
 931  741 m  926  736 v
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 970  754 m  951  736 v
 970  754 m  971  755 v
```

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1168  738 m 1168  755 v
1168  736 m 1168  738 v
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 744  775 m  739  758 v  738  755 v
 761  775 m  757  757 v
 775  775 m  775  774 v
 757  755 m  757  757 v
 773  755 m  775  774 v
 801  761 m  800  775 v
 801  761 m  803  755 v
 830  771 m  828  775 v
 830  771 m  834  767 v  841  762 v  853  761 v  860  761 v  873  765 v
 889  775 v
 912  768 m  896  755 v
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 928  755 m  931  759 v  946  775 v
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 990  775 m  983  768 v  971  755 v
1162  771 m 1160  775 v
1162  771 m 1166  762 v 1168  757 v 1168  755 v
1870  775 m 1870  775 v
1870  775 m 1870  775 v 1883  768 v 1889  763 v 1901  766 v 1909  767 v
1914  775 v
 608  784 m  605  794 v
 608  784 m  614  775 v
 729  794 m  724  782 v  720  775 v
 750  794 m  748  786 v  744  775 v
 765  794 m  762  781 v  761  775 v
 775  775 m  775  775 v  778  794 v
 799  794 m  799  779 v  800  775 v
 823  783 m  821  794 v
 823  783 m  828  775 v
 852  793 m  852  794 v
 852  793 m  853  793 v  869  791 v  873  791 v  879  794 v
 892  776 m  889  775 v
 892  776 m  901  783 v  912  792 v  914  794 v
 931  788 m  918  775 v
 938  794 m  931  788 v
 946  775 m  951  780 v  964  794 v
 964  775 m  970  782 v  982  794 v
 990  775 m  990  775 v 1009  794 v
1141  789 m 1128  794 v
1141  789 m 1146  786 v 1153  782 v 1160  775 v
1865  790 m 1864  794 v
1865  790 m 1870  775 v
1917  794 m 1914  780 v 1914  775 v
 603  798 m  599  811 v
 603  798 m  605  794 v
 729  794 m  736  807 v  738  814 v
 750  794 m  755  807 v  757  814 v
 771  814 m  769  808 v  765  794 v
 782  814 m  778  798 v  778  794 v
 802  814 m  799  799 v  799  794 v
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 844  804 m  842  814 v
 844  804 m  852  794 v
 892  800 m  879  794 v
```

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 892  800 m  911  813 v  912  813 v  912  814 v
 931  810 m  914  794 v
 935  814 m  931  810 v
 938  794 m  951  808 v  957  814 v
 964  794 m  970  801 v  983  814 v
 982  794 m  990  802 v 1001  814 v
1009  794 m 1010  795 v 1027  814 v
1086  814 m 1086  812 v 1088  811 v 1095  802 v 1107  799 v 1111  797 v
1127  794 v 1127  794 v 1128  794 v
1864  794 m 1870  806 v 1878  814 v
1916  801 m 1911  814 v
1916  801 m 1917  794 v
 746  833 m  740  818 v  738  814 v
 764  833 m  758  816 v  757  814 v
 771  814 m  775  826 v  777  833 v
 787  833 m  784  823 v  782  814 v
 806  833 m  803  822 v  802  814 v
 823  833 m  820  820 v  820  814 v
 840  833 m  840  820 v  842  814 v
 867  827 m  864  833 v
 867  827 m  873  823 v  880  821 v  892  824 v  911  833 v
 931  829 m  912  814 v
 931  829 m  935  833 v
 951  829 m  935  814 v
 951  829 m  956  833 v
 970  827 m  957  814 v
 976  833 m  970  827 v
 983  814 m  990  821 v 1002  833 v
1001  814 m 1010  823 v 1019  833 v
1027  814 m 1029  816 v 1042  833 v
1081  833 m 1080  826 v 1086  814 v
1889  819 m 1878  814 v
1889  819 m 1894  819 v 1909  816 v 1910  815 v 1911  814 v
 746  833 m  755  851 v  756  853 v
 772  853 m  770  848 v  764  833 v
 783  853 m  778  836 v
 794  853 m  794  852 v
 777  833 m  778  836 v
 787  833 m  794  852 v
 811  853 m  810  849 v  806  833 v
 827  853 m  824  844 v  823  833 v
 843  853 m  840  840 v  840  833 v
 861  841 m  861  853 v
 861  841 m  864  833 v
 912  834 m  911  833 v
 912  834 m  913  835 v  931  848 v  937  853 v
 951  847 m  935  833 v
 951  847 m  957  853 v
 970  848 m  956  833 v
 975  853 m  970  848 v
 976  833 m  990  848 v  995  853 v
1002  833 m 1010  842 v 1018  853 v
1019  833 m 1029  847 v 1033  853 v
1042  833 m 1049  846 v 1052  853 v
1082  853 m 1080  845 v 1081  833 v
2193  843 m 2190  848 v
2202  840 m 2207  842 v
2222  848 m 2225  850 v
 762  872 m  756  854 v  756  853 v
```

```
 772  853 m  775  861 v  779  872 v
 791  872 m  789  867 v  783  853 v
 794  853 m  795  854 v  800  872 v
 811  853 m  814  861 v  817  872 v
 832  872 m
831  870 v  827  853 v
 846  872 m  844  863 v  843  853 v
 861  872 m  860  859 v  861  853 v
 951  864 m  937  853 v
 959  872 m  951  864 v
 957  853 m  970  866 v  976  872 v
 975  853 m  990  870 v  992  872 v
 995  853 m 1010  872 v 1010  872 v
1018  853 m 1029  869 v
1045  872 m 1038  861 v
1031  872 m 1029  869 v
1033  853 m 1038  861 v
1062  872 m 1055  859 v 1052  853 v
1086  872 m 1084  869 v 1082  853 v
2191  872 m 2189  865 v
2243  872 m 2242  871 v
 768  892 m  766  883 v  762  872 v
 784  892 m  781  878 v  779  872 v
 791  872 m  795  884 v  797  892 v
 806  892 m  803  881 v  800  872 v
 822  892 m  818  877 v  817  872 v
 832  872 m  834  879 v  837  892 v
 850  892 m  849  888 v  846  872 v
 864  892 m  862  881 v  861  872 v
 905  885 m  902  892 v
 905  885 m  912  883 v  925  885 v  931  888 v  936  892 v
 959  872 m  970  885 v  975  892 v
 976  872 m  990  891 v
1006  892 m  996  878 v
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2091 2436 m 2086 2418 v 2086 2417 v
1774 2456 m 1773 2437 v 1773 2436 v
1807 2436 m 1811 2452 v 1812 2456 v
1830 2456 m 1830 2455 v 1826 2436 v
1842 2456 m 1841 2446 v 1840 2436 v
1861 2456 m 1860 2447 v 1861 2436 v
1877 2444 m 1877 2456 v
1877 2444 m 1879 2436 v
1895 2442 m 1893 2456 v
1895 2442 m 1897 2436 v
1916 2443 m 1909 2456 v
1916 2443 m 1924 2436 v
1968 2444 m 1954 2436 v
1979 2456 m 1968 2444 v
1982 2436 m 1987 2441 v 1998 2456 v
2002 2436 m 2007 2443 v 2014 2456 v
2022 2436 m 2026 2445 v 2031 2456 v
2043 2436 m 2046 2443 v
2062 2456 m 2060 2450 v
2050 2456 m 2046 2443 v
2056 2436 m 2060 2450 v
2076 2456 m 2072 2444 v 2071 2436 v
2094 2456 m 2092 2443 v 2091 2436 v
1776 2476 m 1775 2459 v 1774 2456 v
1815 2476 m 1812 2457 v 1812 2456 v
1830 2456 m 1831 2461 v 1832 2476 v
1844 2476 m 1843 2468 v 1842 2456 v
1862 2476 m 1862 2467 v 1861 2456 v
1877 2476 m 1877 2463 v 1877 2456 v
1892 2459 m 1891 2476 v
1905 2472 m 1905 2476 v
1892 2459 m 1893 2456 v
1905 2472 m 1909 2457 v 1909 2456 v 1909 2456 v
1979 2456 m 1987 2465 v 1993 2476 v
1998 2456 m 2007 2472 v
2023 2476 m 2020 2469 v

2009 2476 m 2007 2472 v
2014 2456 m 2020 2469 v
2038 2476 m 2033 2463 v 2031 2456 v
2065 2476 m 2065 2475 v
2056 2476 m 2051 2462 v
2062 2456 m 2065 2475 v
2050 2456 m 2051 2462 v
2079 2476 m 2077 2468 v 2076 2456 v
2096 2476 m 2095 2466 v 2094 2456 v
1777 2481 m 1777 2495 v
1776 2476 m 1777 2481 v
1818 2495 m 1816 2480 v 1815 2476 v
1836 2495 m 1833 2478 v
1848 2495 m 1847 2492 v
1832 2476 m 1833 2478 v
1844 2476 m 1847 2492 v
1865 2495 m 1864 2489 v 1862 2476 v
1879 2495 m 1878 2484 v 1877 2476 v
1892 2495 m 1891 2477 v
1906 2495 m 1905 2491 v
1891 2476 m 1891 2477 v
1905 2476 m 1905 2491 v
1948 2495 m 1948 2495 v
1948 2495 m 1948 2495 v 1948 2495 v
2001 2495 m 1997 2486 v 1993 2476 v
2015 2495 m 2009 2478 v
2023 2476 m 2026 2488 v
2009 2476 m 2009 2478 v
2042 2495 m 2041 2490 v
2028 2495 m 2026 2488 v
2038 2476 m 2041 2490 v
2058 2495 m 2057 2486 v
2065 2476 m 2065 2477 v
2056 2476 m 2057 2486 v
2080 2495 m 2079 2490 v
2068 2495 m 2065 2477 v
2079 2476 m 2079 2490 v
2097 2495 m 2097 2487 v 2096 2476 v
1778 2501 m 1774 2515 v
1777 2495 m 1778 2501 v
1824 2515 m 1822 2506 v 1818 2495 v
1840 2515 m 1838 2502 v 1836 2495 v
1848 2495 m 1850 2504 v 1853 2515 v
1865 2495 m 1870 2512 v 1870 2515 v
1884 2515 m 1883 2508 v 1879 2495 v
1897 2515 m 1893 2499 v 1892 2495 v
1906 2495 m 1909 2509 v 1911 2515 v
1948 2495 m 1948 2496 v 1948 2495 v 1948 2495 v
2004 2515 m 2004 2512 v 2001 2495 v
2017 2515 m 2016 2504 v 2015 2495 v
2044 2515 m 2043 2512 v
2030 2515 m 2028 2497 v
2042 2495 m 2043 2512 v
2028 2495 m 2028 2497 v
2060 2515 m 2059 2508 v 2058 2495 v
2080 2515 m 2080 2510 v
2069 2515 m 2068 2498 v
2080 2495 m 2080 2510 v
2068 2495 m 2068 2498 v

2097 2515 m 2097 2507 v 2097 2495 v
1748 2530 m 1740 2534 v
1748 2530 m 1753 2527 v 1763 2525 v 1772 2517 v 1774 2516 v 1774 2515 v
1824 2515 m 1831 2531 v 1832 2534 v
1849 2534 m 1848 2532 v 1840 2515 v
1860 2534 m 1855 2519 v 1853 2515 v
1878 2534 m 1871 2516 v 1870 2515 v
1884 2515 m 1889 2527 v 1893 2534 v
1906 2534 m 1905 2530 v 1897 2515 v
1922 2534 m 1913 2518 v 1911 2515 v
2002 2530 m 2001 2534 v
2002 2530 m 2004 2515 v
2017 2525 m 2015 2534 v
2017 2525 m 2017 2515 v
2043 2531 m 2043 2534 v
2030 2519 m 2029 2534 v
2043 2531 m 2044 2515 v
2030 2519 m 2030 2515 v
2059 2528 m 2058 2534 v
2059 2528 m 2060 2515 v
2080 2529 m 2079 2534 v
2069 2518 m 2067 2534 v
2080 2529 m 2080 2515 v
2069 2518 m 2069 2515 v
2097 2526 m 2096 2534 v
2097 2526 m 2097 2515 v
1724 2545 m 1714 2554 v
1724 2545 m 1733 2537 v 1735 2537 v 1740 2534 v
1840 2554 m 1833 2537 v 1832 2534 v
1849 2534 m 1850 2537 v 1858 2554 v
1860 2534 m 1870 2552 v 1871 2554 v
1878 2534 m 1889 2554 v 1890 2554 v
1905 2554 m 1900 2545 v 1893 2534 v
1906 2534 m 1909 2538 v 1922 2554 v
1922 2534 m 1928 2542 v 1943 2554 v
1996 2543 m 1988 2554 v
1996 2543 m 2001 2534 v
2024 2552 m 2023 2554 v
2014 2541 m 2008 2554 v
2024 2552 m 2026 2544 v
2014 2541 m 2015 2534 v
2040 2548 m 2038 2554 v
2029 2537 m 2026 2544 v
2040 2548 m 2043 2534 v
2029 2537 m 2029 2534 v
2064 2553 m 2064 2554 v
2057 2545 m 2055 2554 v
2064 2553 m 2065 2544 v
2057 2545 m 2058 2534 v
2078 2547 m 2076 2554 v
2067 2536 m 2065 2544 v
2078 2547 m 2079 2534 v
2067 2536 m 2067 2534 v
2095 2544 m 2093 2554 v
2095 2544 m 2096 2534 v
1706 2566 m 1702 2573 v
1706 2566 m 1713 2554 v 1714 2554 v 1714 2554 v
1840 2554 m 1850 2567 v 1854 2573 v
1858 2554 m 1870 2571 v 1872 2573 v

1884 2573 m 1874 2558 v 1871 2554 v
1906 2573 m 1890 2555 v 1890 2554 v
1905 2554 m 1909 2558 v 1926 2573 v
1928 2560 m 1922 2554 v
1928 2560 m 1943 2568 v 1948 2571 v
1948 2557 m 1943 2554 v
1948 2571 m 1957 2573 v
1948 2557 m 1952 2557 v 1968 2560 v
1986 2572 m 1980 2573 v
1973 2559 m 1968 2560 v
1986 2572 m 1987 2572 v
1973 2559 m 1987 2554 v
1998 2565 m 1987 2572 v
1987 2554 m 1987 2554 v
1998 2565 m 2007 2555 v
1987 2554 m 1988 2554 v
2018 2565 m 2010 2573 v
2007 2554 m 2007 2555 v
2018 2565 m 2023 2554 v
2007 2554 m 2008 2554 v
2035 2563 m 2029 2573 v
2035 2563 m 2038 2554 v
2061 2569 m 2058 2573 v
2053 2561 m 2048 2573 v
2061 2569 m 2064 2554 v
2053 2561 m 2055 2554 v
2075 2563 m 2071 2573 v
2075 2563 m 2076 2554 v
2092 2561 m 2088 2573 v
2092 2561 m 2093 2554 v
1701 2580 m 1698 2593 v
1701 2580 m 1702 2573 v
1808 2589 m 1806 2593 v
1808 2589 m 1811 2588 v 1826 2593 v
1854 2573 m 1870 2592 v 1870 2593 v
1889 2593 m 1887 2591 v 1872 2573 v
1884 2573 m 1889 2579 v 1904 2593 v
1909 2577 m 1906 2573 v
1909 2577 m 1921 2585 v 1928 2591 v
1928 2575 m 1926 2573 v
1928 2591 m 1932 2593 v
1928 2575 m 1932 2577 v 1948 2586 v 1963 2589 v 1968 2590 v
1968 2575 m 1957 2573 v
1983 2588 m 1968 2590 v
1970 2575 m 1968 2575 v
1983 2588 m 1987 2587 v
1970 2575 m 1980 2573 v
1997 2583 m 1987 2587 v
1997 2583 m 2007 2577 v
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2009 2575 m 2007 2577 v
2020 2586 m 2026 2578 v
2009 2575 m 2010 2573 v
2041 2588 m 2036 2593 v
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2041 2588 m 2046 2577 v
2028 2575 m 2029 2573 v
2064 2592 m 2063 2593 v
2056 2583 m 2049 2593 v

2047 2575 m 2046 2577 v
2064 2592 m 2065 2587 v
2056 2583 m 2058 2573 v
2047 2575 m 2048 2573 v
2083 2591 m 2083 2593 v
2070 2578 m 2065 2587 v
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2070 2578 m 2071 2573 v
2088 2576 m 2085 2583 v
2088 2576 m 2088 2573 v
1704 2612 m 1700 2599 v 1698 2593 v
1787 2608 m 1782 2612 v
1787 2608 m 1792 2603 v 1797 2599 v 1806 2593 v
1831 2594 m 1826 2593 v
1831 2594 m 1834 2596 v 1850 2610 v 1853 2612 v
1889 2611 m 1870 2593 v
1889 2593 m 1889 2593 v
1889 2611 m 1891 2612 v
1889 2593 m 1891 2594 v 1909 2610 v
1909 2597 m 1904 2593 v
1909 2610 m 1914 2612 v
1909 2597 m 1920 2603 v 1928 2610 v 1936 2612 v
1948 2600 m 1932 2593 v
1948 2600 m 1957 2602 v 1968 2604 v 1979 2604 v 1987 2603 v 1996 2601 v
2007 2596 v
2022 2608 m 2013 2612 v
2009 2595 m 2007 2596 v
2022 2608 m 2026 2604 v
2009 2595 m 2011 2593 v
2040 2607 m 2033 2612 v
2033 2599 m 2026 2604 v
2040 2607 m 2046 2598 v
2033 2599 m 2036 2593 v
2059 2606 m 2052 2612 v
2048 2595 m 2046 2598 v
2059 2606 m 2063 2593 v
2048 2595 m 2049 2593 v
2080 2608 m 2077 2612 v
2080 2608 m 2083 2593 v
1713 2622 m 1704 2612 v
1713 2622 m 1726 2625 v 1733 2628 v 1747 2626 v 1753 2626 v 1763 2622 v
1772 2618 v 1776 2617 v 1782 2612 v
1870 2627 m 1853 2612 v
1870 2627 m 1877 2632 v
1909 2625 m 1891 2612 v
1909 2625 m 1925 2632 v
1928 2621 m 1914 2612 v
1928 2621 m 1940 2624 v 1948 2628 v
1948 2617 m 1936 2612 v
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1948 2617 m 1954 2618 v
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1968 2621 m 1954 2618 v
1968 2631 m 1986 2631 v
1968 2621 m 1977 2622 v
1986 2631 m 1987 2631 v
1977 2622 m 1987 2621 v
2004 2629 m 1987 2631 v
1995 2620 m 1987 2621 v

2004 2629 m 2007 2628 v
1995 2620 m 2007 2616 v
2019 2624 m 2007 2628 v
2010 2615 m 2007 2616 v
2019 2624 m 2026 2618 v
2010 2615 m 2013 2612 v
2041 2627 m 2031 2632
v
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2041 2627 m 2046 2620 v
2030 2616 m 2033 2612 v
2050 2617 m 2046 2620 v
2050 2617 m 2052 2612 v
2075 2622 m 2066 2632 v
2075 2622 m 2077 2612 v
1889 2640 m 1877 2632 v
1889 2640 m 1901 2644 v 1909 2648 v 1923 2652 v
1928 2634 m 1925 2632 v
1928 2634 m 1931 2634 v 1948 2640 v 1958 2642 v 1968 2644 v 1980 2645 v
1987 2645 v 1999 2644 v 2007 2643 v 2016 2641 v 2026 2636 v 2029 2635 v
2031 2632 v
2060 2646 m 2048 2652 v
2060 2646 m 2065 2634 v 2066 2633 v 2066 2632 v
2297 2652 m 2297 2648 v 2300 2649 v 2319 2651 v 2320 2651 v 2320 2652 v
1928 2653 m 1923 2652 v
1928 2653 m 1930 2653 v 1948 2658 v 1955 2659 v 1968 2661 v 1978 2662 v
1987 2663 v 1999 2664 v 2007 2663 v 2018 2663 v 2026 2661 v 2035 2660 v
2046 2653 v 2047 2653 v 2048 2652 v
2295 2671 m 2293 2664 v 2297 2652 v
2339 2664 m 2320 2652 v
2339 2664 m 2349 2671 v
2298 2691 m 2297 2687 v 2295 2671 v
2349 2671 m 2359 2682 v 2365 2691 v
2298 2691 m 2300 2702 v 2302 2710 v
2370 2710 m 2367 2699 v 2365 2691 v
2310 2730 m 2304 2714 v 2302 2710 v
2369 2721 m 2368 2730 v
2369 2721 m 2370 2710 v
2310 2730 m 2320 2748 v 2321 2749 v
2357 2748 m 2355 2749 v
2357 2748 m 2359 2746 v 2365 2737 v 2368 2730 v
2339 2756 m 2321 2749 v
2344 2754 m 2339 2756 v
2344 2754 m 2355 2749 v
1984 2824 m 1983 2827 v
1984 2824 m 1987 2822 v 1994 2815 v 2007 2810 v 2009 2810 v 2026 2811 v
2031 2813 v 2046 2819 v 2056 2827 v
1144 2844 m 1143 2847 v
1144 2844 m 1146 2841 v 1160 2841 v 1166 2843 v 1169 2847 v
1980 2840 m 1980 2847 v
1980 2840 m 1983 2827 v
2065 2836 m 2056 2827 v
2075 2847 m 2065 2836 v
1142 2867 m 1142 2862 v 1143 2847 v
1174 2867 m 1170 2851 v 1169 2847 v
1982 2867 m 1981 2860 v 1980 2847 v
2075 2847 m 2085 2863 v 2087 2867 v
1142 2867 m 1146 2878 v 1159 2886 v
1173 2873 m 1168 2886 v

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 1173 2873 m 1174 2867 v
 1982 2867 m 1987 2882 v 1989 2886 v
 2094 2886 m 2089 2870 v 2087 2867 v
 1166 2888 m 1159 2886 v
 1167 2887 m 1166 2888 v
 1167 2887 m 1168 2886 v
 2001 2906 m 1992 2891 v 1989 2886 v
 2094 2895 m 2093 2906 v
 2094 2886 m 2094 2895 v
 2001 2906 m 2007 2912 v 2022 2925 v
 2084 2925 m 2083 2925 v
 2084 2925 m 2085 2923 v 2091 2912 v 2093 2906 v
 2026 2928 m 2022 2925 v
 2026 2928 m 2032 2931 v 2046 2937 v 2059 2938 v 2065 2938 v 2074 2934 v
 2083 2925 v
 1005 3019 m 1002 3023 v
 1005 3019 m 1010 3015 v 1018 3023 v
stroke

vmsave restore

%start labeling
/Helvetica findfont 16 scalefont setfont

519 598 467 598 4 5 8 arrow
1 setgray
fill
0 setgray
519 598 467 598 1 3 8 arrow
fill
stroke
526 594 moveto
(CJ2) show
stroke

490 513 422 513 4 5 8 arrow
1 setgray
fill
0 setgray
490 513 422 513 1 3 8 arrow
fill
stroke
497 509 moveto
(CJ1) show
stroke

416 429 363 429 4 5 8 arrow
1 setgray
fill
0 setgray
416 429 363 429 1 3 8 arrow
fill
stroke
423 425 moveto
(CF) show
stroke

344 328 291 328 4 5 8 arrow
1 setgray
```

```
fill
0 setgray
344 328 291 328 1 3 8 arrow
fill
stroke
351 324 moveto
(J1) show
stroke

280 235 227 235 4 5 8 arrow
1 setgray
fill
0 setgray
280 235 227 235 1 3 8 arrow
fill
stroke
290 231 moveto
(J2) show
stroke



showpage
userdict /eop-hook known {eop-hook} if
%%Trailer
userdict /end-hook known {end-hook} if
%%EOF
```

From abridle Mon Nov 13 10:00:02 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["35" "Mon" "13" "November" "1995" "10:00:00" "-0500" "Alan Bridle" "abridle"
nil "4" "3c353 wfpc2 image" "^From:" nil nil "11" nil nil nil nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA115417; Mon, 13 Nov 1995 10:00:00 -0500
Message-Id: <9511131500.AA115417@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain
Subject: 3c353 wfpc2 image
Date: Mon, 13 Nov 1995 10:00:00 -0500

is in /AIPS/FITS/3C353HST.FIT

A.

From mswain Mon Nov 13 10:31:01 1995
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["152" "Mon" "13" "November" "1995" "10:31:01" "-0500" "Mark Swain" "mswain"
"<9511131531.AA121730@polaris.cv.nrao.edu>" "6" "jet" "^From:" nil nil "11" nil nil
nil nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA121730; Mon, 13 Nov 1995 10:31:01 -0500
Message-Id: <9511131531.AA121730@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: jet
Date: Mon, 13 Nov 1995 10:31:01 -0500

I must have gotten confused.
The tube distrubution produces the
expected results when specifying an non-zero
inner radius with a helical field.

Mark

From abridle Mon Nov 13 10:40:27 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["386" "Mon" "13" "November" "1995" "10:40:27" "-0500" "Alan Bridle"
"abridle" nil "17" "Re: jet" "^From:" nil nil "11" nil nil nil nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA135770; Mon, 13 Nov 1995 10:40:27 -0500
Message-Id: <9511131540.AA135770@polaris.cv.nrao.edu>
In-Reply-To: <9511131531.AA121730@polaris.cv.nrao.edu>
References: <9511131531.AA121730@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: jet
Date: Mon, 13 Nov 1995 10:40:27 -0500

Mark Swain writes:
 > I must have gotten confused.
 > The tube distrubution produces the
 > expected results when specifying an non-zero
 > inner radius with a helical field.
 >
 > Mark

I have also tested this. I cannot
get exactly the same results as in
Robert's paper, but they are very
nearly the same. The small difference
may need some probing, but it is second-
order.

A.

From mswain Tue Nov 14 14:37:09 1995
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["179" "Tue" "14" "November" "1995" "14:37:08" "-0500" "Mark Swain" "mswain"
"<9511141937.AA96314@polaris.cv.nrao.edu>" "10" "X band, 0.44 fnl images" "^From:"
nil nil "11" nil nil nil nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA96314; Tue, 14 Nov 1995 14:37:08 -0500
Message-Id: <9511141937.AA96314@polaris.cv.nrao.edu>
From: mswain (Mark Swain)
To: abridle
Subject: X band, 0.44 fnl images
Date: Tue, 14 Nov 1995 14:37:08 -0500

Alan,

I have made the I,Q,U final
0.44 FWHM, 8.4 GHz images.
You can give me you "final image"
tape and I can put them on it
or I can put the images out
in the FITS area.

Mark

From abridle Thu Nov 16 13:44:23 1995
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["749" "Thu" "16" "November" "1995" "13:44:23" "-0500" "Alan Bridle"
"abridle" nil "29" "Re: 353 paper" "^From:" nil nil "11" nil nil nil nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA53187; Thu, 16 Nov 1995 13:44:23 -0500
Message-Id: <9511161844.AA53187@polaris.cv.nrao.edu>
In-Reply-To: <9511161638.AA199342@polaris.cv.nrao.edu>
References: <9511161503.AA53439@polaris.cv.nrao.edu>
<9511161638.AA199342@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: mswain (Mark Swain)
Subject: Re: 353 paper
Date: Thu, 16 Nov 1995 13:44:23 -0500

Mark Swain writes:

> Have re-read paper and have no further comments.
>

I'll send it to Phil.
What do you want to do about the glossy for Fig.1 now?

> "final" 0.44 arcsec, 8.4 GHz Stokes Q and U images
> in FITS area undernames:
>
> X_.44.SBML_Q.10.353
> X_.44.SBML_U.10.353
>

I have copied these to my disk successfully so you can delete them any
time convenient.

It occurs to me that there is a problem with computing the P image
from these as the primary beam correction is now done and this
distorts the Ricean bias correction. Maybe we have to neglect this,
but it is a nuisance.

It would be better to compute the P images from the separated Q and U
images for each pointing and then run LTESS on the composite P image?

A.

From root Thu Feb 15 17:07:52 1996
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["31" "Thu" "15" "February" "1996" "17:05:16" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" "<Pine.3.87.9602151715.A2103-0100000@astrosun2>"
"2" "email address" "^From:" nil nil "2" nil nil nil nil]
      nil)
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA20038; Thu, 15 Feb 1996 17:07:46 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.1/8.7.1/CV-2.1) with SMTP id RAA23327 for <abridle@nrao.edu>;
Thu, 15 Feb 1996 17:07:44 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id RAA26955 for <abridle@nrao.edu>; Thu, 15
Feb 1996 17:07:07 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
RAA02107; Thu, 15 Feb 1996 17:07:04 -0500
Message-Id: <Pine.3.87.9602151715.A2103-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: abridle@nrao.edu
Subject: email address
Date: Thu, 15 Feb 1996 17:05:16 -0500 (EST)

swain@astrosun.tn.cornell.edu

From abridle Thu Feb 15 20:38:36 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["37" "Thu" "15" "February" "1996" "20:38:13" "-0500" "Alan Bridle" "abridle"
nil "3" "Re: email address" "^From:" nil nil "2" nil nil nil nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA45584; Thu, 15 Feb 1996 20:38:13 -0500
Message-Id: <9602160138.AA45584@polaris.cv.nrao.edu>
In-Reply-To: <Pine.3.87.9602151715.A2103-0100000@astrosun2>
References: <Pine.3.87.9602151715.A2103-0100000@astrosun2>
From: abridle (Alan Bridle)
To: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
Subject: Re: email address
Date: Thu, 15 Feb 1996 20:38:13 -0500

Gotcha. Hope the move went o.k.

A.

From root Fri Feb 23 10:36:24 1996
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
["212" "Fri" "23" "February" "1996" "10:28:34" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" "<Pine.3.87.9602231034.A3057-0100000@astrosun2>"
"9" "defense date" "^From:" nil nil "2" nil nil nil nil]
nil)
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)

id AA18796; Fri, 23 Feb 1996 10:36:23 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.1/8.7.1/CV-2.1) with SMTP id KAA22907 for <abridle@nrao.edu>;
Fri, 23 Feb 1996 10:36:17 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id KAA28156 for <abridle@nrao.edu>; Fri, 23
Feb 1996 10:35:41 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
KAA03075; Fri, 23 Feb 1996 10:35:39 -0500
Message-Id: <Pine.3.87.9602231034.A3057-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: abridle@nrao.edu
Subject: defense date
Date: Fri, 23 Feb 1996 10:28:34 -0500 (EST)

Alan,

My defense has been scheduled for 2:00 pm March 28.
It will be held in a as yet to be determined room in the
Physics and Astronomy Building. My current plan is to drive
up the morning of the 28th.

Mark

From abridle Fri Feb 23 11:41:37 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["761" "Fri" "23" "February" "1996" "11:41:24" "-0500" "Alan Bridle"
"abridle" nil "25" "Re: defense date" "^From:" nil nil "2" nil nil nil nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA53060; Fri, 23 Feb 1996 11:41:24 -0500
Message-Id: <9602231641.AA53060@polaris.cv.nrao.edu>
In-Reply-To: <Pine.3.87.9602231034.A3057-0100000@astrosun2>
References: <Pine.3.87.9602231034.A3057-0100000@astrosun2>
From: abridle (Alan Bridle)
To: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
Subject: Re: defense date
Date: Fri, 23 Feb 1996 11:41:24 -0500

Mark R. Swain writes:
> Alan,
>
> My defense has been scheduled for 2:00 pm March 28.
> It will be held in a as yet to be determined room in the
> Physics and Astronomy Building. My current plan is to drive
> up the morning of the 28th.
>
> Mark
>

OK. it's in my calendar.

N.B. I was working on the bibliography for the Alabama proceedings
and took a quick look at yours while doing some checking.
It seems you had an accident of some kind: lots of
volume numbers missing from it and also a few years missing.
Also some items out of order -- actually not clear whether
the order was meant to be entirely alphabetical or partly
chronological. Will need some fixing, whichever.

It's now warm and foggy down here. But the snow had gone.

A.

From root Mon Mar 11 18:31:23 1996
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
["1033" "Mon" "11" "March" "1996" "18:02:27" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" "<Pine.3.87.9603111827.A5972-0100000@astrosun2>"
"38" "353 B fld" "^From:" nil nil "3" nil nil nil nil]
nil)
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA49743; Mon, 11 Mar 1996 18:31:22 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.1/8.7.1/CV-2.1) with SMTP id SAA16930 for <abridle@nrao.edu>;
Mon, 11 Mar 1996 18:31:19 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id SAA10055 for <abridle@nrao.edu>; Mon, 11
Mar 1996 18:30:39 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
SAA06011; Mon, 11 Mar 1996 18:30:37 -0500
Message-Id: <Pine.3.87.9603111827.A5972-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: abridle@nrao.edu
Subject: 353 B fld
Date: Mon, 11 Mar 1996 18:02:27 -0500 (EST)

Alan,

I would like to compare my equipartition calculation
spread-sheet with yours. Here is a sample calculation
based on the following values.

average flux density	0.0003		Jy/beam
z	0.0304		
Ho	100	km/s/Mpc	
spectral index	-1.01	S=So\nu^{\alpha}	
frequency	4.885	GHz	
Beam FWHM	0.4	arcsec	
region radius	3.0	arcsec	
filling fact.	1		
k	1		
C13	28000		
C12	71000000		
distance to 3C353	91.2	Mpc	
Luminosity (FWHM area)	1.0E31		watts
Lum. region	1.6E33	watts	
1 arcsec projected	442.32		parsecs
total minimum Energy	2.4E55		ergs
B field minimum energy	0.303		micro Gauss

These results assume integrating S over frequency from
1E7 to 1E11 Hz. "Region" is a cylindrical area (viewed
end on of course) for which the minimum energy and B field
are calculated; the cylinder has a height of 2*(region radius).
k is ratio of heavy particle energy to electron energy.
C13 and C12 correspond to the Pacholczyk definitions.

I suspect that my spreadsheet is a factor of 10 low
in calculating B minimum energy values.

Mark

From root Tue Mar 12 10:46:16 1996
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["137" "Tue" "12" "March" "1996" "10:42:21" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" "<Pine.3.87.9603121021.A6152-0100000@astrosun2>"
"8" "" "^From:" nil nil "3" nil nil nil nil]
      nil)
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA24398; Tue, 12 Mar 1996 10:46:15 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.1/8.7.1/CV-2.1) with SMTP id KAA28826 for
<abridle@polaris.cv.nrao.edu>; Tue, 12 Mar 1996 10:46:14 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id KAA16954 for
<abridle@polaris.cv.nrao.edu>; Tue, 12 Mar 1996 10:44:19 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
KAA06170; Tue, 12 Mar 1996 10:44:18 -0500
In-Reply-To: <9603120410.AA23277@polaris.cv.nrao.edu>
Message-Id: <Pine.3.87.9603121021.A6152-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: Alan Bridle <abridle@polaris.cv.nrao.edu>
Subject:
Date: Tue, 12 Mar 1996 10:42:21 -0500 (EST)

Alan,

Do you have a 35mm slide of 3C 31 (total intensity) I
could have? I would like to use it in a talk I will
be giving here.

Mark

From abridle Wed Mar 13 13:01:19 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["289" "Wed" "13" "March" "1996" "13:01:04" "-0500" "Alan Bridle" "abridle"
nil "15" "Re: " "^From:" nil nil "3" nil nil nil nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA42208; Wed, 13 Mar 1996 13:01:04 -0500
Message-Id: <9603131801.AA42208@polaris.cv.nrao.edu>
In-Reply-To: <Pine.3.87.9603121021.A6152-0100000@astrosun2>
References: <9603120410.AA23277@polaris.cv.nrao.edu>
      <Pine.3.87.9603121021.A6152-0100000@astrosun2>
From: abridle (Alan Bridle)
To: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
Subject: Re:
Date: Wed, 13 Mar 1996 13:01:04 -0500

Mark R. Swain writes:
 > Alan,
 >
 > Do you have a 35mm slide of 3C 31 (total intensity) I
 > could have? I would like to use it in a talk I will
 > be giving here.
 >
 > Mark
 >

Nothing recent is on 35mm. I have some color .PS files
though. What scale/resolution do you want?

A.

From abridle Wed Mar 13 13:36:59 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["1506" "Wed" "13" "March" "1996" "13:36:49" "-0500" "Alan Bridle" "abridle"
nil "55" "Re: 353 B fld" "^From:" nil nil "3" nil nil nil nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA37405; Wed, 13 Mar 1996 13:36:49 -0500
Message-Id: <9603131836.AA37405@polaris.cv.nrao.edu>
In-Reply-To: <Pine.3.87.9603111827.A5972-0100000@astrosun2>
References: <Pine.3.87.9603111827.A5972-0100000@astrosun2>
From: abridle (Alan Bridle)
To: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
Subject: Re: 353 B fld
Date: Wed, 13 Mar 1996 13:36:49 -0500

Mark R. Swain writes:
 > Alan,
 >
 > I would like to compare my equipartition calculation
 > spread-sheet with yours. Here is a sample calculation
 > based on the following values.
 >
 > average flux density 0.0003   Jy/beam
 > z   0.0304
 > Ho   100   km/s/Mpc
 > spectral index   -1.01   S=So\nu^{\alpha}
 > frequency   4.885   GHz
 > Beam FWHM   0.4   arcsec
 > region radius   3.0   arcsec
 > filling fact.   1
 > k   1
 > C13   28000
 > C12   71000000
 >
 > distance to 3C353   91.2   Mpc
 > Luminosity (FWHM area)   1.0E31   watts
 > Lum. region   1.6E33   watts
 > 1 arcsec projected   442.32   parsecs
 > total minimum Energy 2.4E55   ergs
 > B field minimum energy   0.303   micro Gauss
 >
 >
 > These results assume integrating S over frequency from
 > 1E7 to 1E11 Hz. "Region" is a cylindrical area (viewed
 > end on of course) for which the minimum energy and B field
 > are calculated; the cylinder has a height of 2*(region radius).
 > k is ratio of heavy particle energy to electron energy.
 > C13 and C12 correspond to the Pacholczyk definitions.
 >
 > I suspect that my spreadsheet is a factor of 10 low
 > in calculating B minimum energy values.
 >
 > Mark
 >

I have done what I think is the same calculation:

For a filled cylinder whose surface area is that of a 0.4" Gaussian
beam and whose depth is 3 arcsec, at z=0.0304, and whose

flux density per beam is 0.0003 Jy at 4885 MHz, s.i. 1.01:

1" = 0.42 kpc
D = 91.8 Mpc
L = 1.4 E31 W
Emin = 1.6 E46 J   for k=1
Beq = 3.8 E-5 gauss

A.

From root Wed Mar 13 15:52:12 1996
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
["726" "Wed" "13" "March" "1996" "15:42:13" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" "<Pine.3.87.9603131513.A6332-0100000@astrosun2>"
"20" "3C 31" "^From:" nil nil "3" nil nil nil nil]
nil)
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA23148; Wed, 13 Mar 1996 15:52:11 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.1/8.7.1/CV-2.1) with SMTP id PAA27181 for
<abridle@polaris.cv.nrao.edu>; Wed, 13 Mar 1996 15:52:10 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU
[128.84.242.38]) by astrosun (8.6.12/8.6.12) with ESMTP id PAA29651 for
<abridle@polaris.cv.nrao.edu>; Wed, 13 Mar 1996 15:50:12 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
PAA06367; Wed, 13 Mar 1996 15:50:11 -0500
In-Reply-To: <9603131801.AA42208@polaris.cv.nrao.edu>
Message-Id: <Pine.3.87.9603131513.A6332-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: Alan Bridle <abridle@polaris.cv.nrao.edu>
Subject: 3C 31
Date: Wed, 13 Mar 1996 15:42:13 -0500 (EST)

>
> Nothing recent is on 35mm. I have some color .PS files
> though. What scale/resolution do you want?
>
I want to show the region you and Robert are fitting
along with about an equal amount (of angular distance)
jet and counterjet beyond that region. I would like the
enough resolution in the image to demonstrate that there
are features - such as the arcs - which are not taken into
account by Roberts model but that the model, none-the-less,
is a good approximation to the jet and counterjet before the
first bend in the jet. So, what every resolution will accomplish
the above goals will be fine with me. If what you will be
providing is a large .ps image, then it is probably better
for me to ftp it.

Mark

From abridle Wed Mar 13 17:31:20 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["1998" "Wed" "13" "March" "1996" "17:30:02" "-0500" "Alan Bridle" "abridle"
nil "43" "3C31 images" "^From:" nil nil "3" nil nil nil nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA54314; Wed, 13 Mar 1996 17:30:02 -0500
Message-Id: <9603132230.AA54314@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: swain@astrosun.tn.cornell.edu
Subject: 3C31 images
Date: Wed, 13 Mar 1996 17:30:02 -0500

There are now color .ps files for two 3C31 images in
the NRAO-staff/abridle directory on the C'ville ftp
server:

3c31xhi.ps is a color rendition of the 8.4 GHz image at 0.3" resolution showing the features you mentioned. It also shows that the main jet brightens away from the core at first (as expected if it emerges from Doppler "hiding" at first, then goes through the expected maximum that corresponds to the spine field being edge-on in the jet rest-frame (before aberration). In contrast, the counterjet intensity increase is monotonic, as expected. Further, you can see the "flaring" of the outer contours where the main jet decelerates hardest, as expected from dumping of bulk k.e. into heat through the mass-loading. Lot of goodies in one picture!

3c31xsid.ps is a color rendition of the "sidedness" ratio image obtained by rotating the counterjet on top of the jet and dividing to obtain an image of the cj/j intensity ratio. This clearly demos our main point: that the ratios down the flaring sides of the jet are consistent with much slower flow there than in the spine. The longitudinal decrease of the ratio implying deceleration of the spine as you go along the jet is also very clear. This display stops where the jet starts to bend, and illustrates that the spine has symmetrized before the bending starts, so the jet is probably well into the subrelativistic regime when it starts to bend.

Make sure you say the words "Robert Laing" every other sentence while showing this stuff to anyone ....

Let me know when you have ftp'd them as I would like to get them off Jeff's disk a.s.a.p.

Thanks, A.

From root Mon Mar 18 22:28:10 1996
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
["844" "Mon" "18" "March" "1996" "22:06:24" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" "<Pine.3.87.9603182224.A7579-0100000@astrosun2>"
"24" "Thesis corrections" "^From:" nil nil "3" nil nil nil nil]
nil)
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA47005; Mon, 18 Mar 1996 22:28:09 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.5/8.7.1/CV-2.1) with SMTP id WAA02485 for <abridle@nrao.edu>;
Mon, 18 Mar 1996 22:28:06 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id WAA28923 for <abridle@nrao.edu>; Mon, 18
Mar 1996 22:27:29 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
WAA07597; Mon, 18 Mar 1996 22:27:28 -0500
Message-Id: <Pine.3.87.9603182224.A7579-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: abridle@nrao.edu
Subject: Thesis corrections
Date: Mon, 18 Mar 1996 22:06:24 -0500 (EST)

Alan,

I am thinking of comming back to C'ville to make
what ever thesis corrections need to be made,
assuming they are not completely trivial. The
computing situation here is quite bad. I have
asked Gareth if I can use truchas during the first
week of April and he thinks it would be ok. I
still need to get Gordon's approval.

I'll list the worst of the computer problems.
1) No DAT drives (practically speaking) in the building
2) No disk space anywhere
3) a version of ispell so old its almost unrecognizable
4) Feudal approach to networking and computing resources.

It's been difficult to work on the thesis. I bought myself
a machine but it hasn't shown up yet. I bought myself a DAT
drive as well. Gordon said he had a DAT drive in the lab -
turns out he didn't know a the difference between a DAT
drive and a QUIC tape.

Mark

From abridle Mon Mar 18 23:32:37 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["716" "Mon" "18" "March" "1996" "23:32:11" "-0500" "Alan Bridle" "abridle"
nil "22" "Re: Thesis corrections" "^From:" nil nil "3" nil nil nil nil]
      nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA25552; Mon, 18 Mar 1996 23:32:11 -0500
Message-Id: <9603190432.AA25552@polaris.cv.nrao.edu>
In-Reply-To: <Pine.3.87.9603182224.A7579-0100000@astrosun2>
References: <Pine.3.87.9603182224.A7579-0100000@astrosun2>
From: abridle (Alan Bridle)
To: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
Subject: Re: Thesis corrections
Date: Mon, 18 Mar 1996 23:32:11 -0500

Mark R. Swain writes:
 > Alan,
 >
 > I am thinking of comming back to C'ville to make
 > what ever thesis corrections need to be made,
 > assuming they are not completely trivial. The
 > computing situation here is quite bad. I have
 > asked Gareth if I can use truchas during the first
 > week of April and he thinks it would be ok. I
 > still need to get Gordon's approval.
 >

Sounds a bit grim, and presumably does not bode well for
doing much data reduction on VLA/VLBA projects there.
I think Jim Condon has been using truchas for survey
things but Gareth will know all about that, of course.
I guess making sure you got as much as possible done
while here was indeed the right strategy, then.

A.

From root Tue Mar 19 10:35:22 1996
X-VM-v5-Data: ([nil nil nil nil nil nil t nil nil]
      ["281" "Tue" "19" "March" "1996" "10:27:58" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" nil "15" "Re: Address" "^From:" nil nil "3" nil nil
nil nil]
      nil)
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA42841; Tue, 19 Mar 1996 10:35:21 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.5/8.7.1/CV-2.1) with SMTP id KAA10928 for
<abridle@polaris.cv.nrao.edu>; Tue, 19 Mar 1996 10:35:18 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id KAA03033 for
<abridle@polaris.cv.nrao.edu>; Tue, 19 Mar 1996 10:33:26 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
KAA07639; Tue, 19 Mar 1996 10:33:24 -0500
In-Reply-To: <9603191445.AA52030@polaris.cv.nrao.edu>
Message-Id: <Pine.3.87.9603191058.A7635-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: Alan Bridle <abridle@polaris.cv.nrao.edu>
Subject: Re: Address
Date: Tue, 19 Mar 1996 10:27:58 -0500 (EST)

> I need to update your mailing address for the Alabama
> participants' list. Can you send me the full mailing
> address, phone/fax numbers for your current office?
>

224 Space Sciences Building
Cornell Unibersity
Ithaca, NY 14853

phone: 607-255-3140
fax: 607-255-5875

From root Tue Mar 19 11:25:07 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["509" "Tue" "19" "March" "1996" "11:12:19" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" nil "14" "Re: Thesis corrections" "^From:" nil nil
"3" nil nil nil nil]
nil)
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA52874; Tue, 19 Mar 1996 11:25:06 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.5/8.7.1/CV-2.1) with SMTP id LAA12415 for
<abridle@polaris.cv.nrao.edu>; Tue, 19 Mar 1996 11:25:04 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id LAA03329 for
<abridle@polaris.cv.nrao.edu>; Tue, 19 Mar 1996 11:23:01 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
LAA07724; Tue, 19 Mar 1996 11:22:59 -0500
In-Reply-To: <9603190432.AA25552@polaris.cv.nrao.edu>
Message-Id: <Pine.3.87.9603191119.A7635-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From:
"Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: Alan Bridle <abridle@polaris.cv.nrao.edu>
Subject: Re: Thesis corrections
Date: Tue, 19 Mar 1996 11:12:19 -0500 (EST)

>
> Sounds a bit grim, and presumably does not bode well for
> doing much data reduction on VLA/VLBA projects there.

I should be in better shape when I get my new machine.
It will be a 133 MHz Pentium running Linux. I'll install
AIPS and all the other goodies I want. If I need more disk,
I'll just buy it. For computationally intensive jobs, I
can always use the DEC alpha or rhesus and ringtail. I can
always ftp postscript plots and images even if I can't
set the AIPS TV to a remote host.

Mark

From abridle Tue Mar 19 23:03:20 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["567" "Tue" "19" "March" "1996" "23:03:09" "-0500" "Alan Bridle" "abridle"
nil "15" "Alabama update" "^From:" nil nil "3" nil nil nil nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA40782; Tue, 19 Mar 1996 23:03:09 -0500
Message-Id: <9603200403.AA40782@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: swain@astrosun.tn.cornell.edu
Subject: Alabama update
Date: Tue, 19 Mar 1996 23:03:09 -0500

We are about to put the whole bibliography for the meeting together
and I'll send you this as soon as I have it, as it may help you
when you are touching up yours.

I have also done what I hope is the last pass across all the
papers I have been editing, including my review, and
the .ps files for these are updated in my area off the
conference home page. Feel free to browse them, especially my
review as I have touched on quite a few of the points we
discussed about 353 and continuity with other things. Any
comments you have on that would be welcome.

A.

From abridle Wed Mar 20 10:24:36 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["658" "Wed" "20" "March" "1996" "10:24:11" "-0500" "Alan Bridle" "abridle"
nil "22" "darker 353 .ps" "^From:" nil nil "3" nil nil nil nil]
nil)
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
id AA43856; Wed, 20 Mar 1996 10:24:11 -0500
Message-Id: <9603201524.AA43856@polaris.cv.nrao.edu>
From: abridle (Alan Bridle)
To: swain@astrosun.tn.cornell.edu
Subject: darker 353 .ps
Date: Wed, 20 Mar 1996 10:24:11 -0500

Mark,

While I was fiddling with the Alabama .ps files I recalled
that you said you would like the image that we are showing in
the conference proceedings to be a little darker round the
edges. Please compare swain.ps and swainold.ps in
ftp/NRAO-staff/abridle/alabama/private and tell me which you
prefer.

There's a lot of variation in how dark things come up on
printers, but the new version is just a tad darker on the
printer we will be using for the final run.

It's also smaller on disk, making the file easier to load.

I will keep the .gif image as before in the HTML version
as it looks pretty good on most TV screens I have displayed
it on.

A.

From VM Mon Apr 1 15:20:10 1996
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["270" "Mon" "25" "March" "1996" "09:49:15" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" "<Pine.3.87.9603250915.A8125-0100000@astrosun2>"
"10" "C'ville" "^From:" nil nil "3" nil nil nil nil]
      nil)
Content-Length: 270
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA46580; Mon, 25 Mar 1996 09:52:31 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.5/8.7.1/CV-2.1) with SMTP id JAA06461 for <abridle@nrao.edu>;
Mon, 25 Mar 1996 09:52:26 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id JAA00884 for <abridle@nrao.edu>; Mon, 25
Mar 1996 09:51:49 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
JAA08149; Mon, 25 Mar 1996 09:51:47 -0500
Message-Id: <Pine.3.87.9603250915.A8125-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: abridle@nrao.edu
Subject: C'ville
Date: Mon, 25 Mar 1996 09:49:15 -0500 (EST)

Alan,

Who should I talk to about getting a key to my old office and
the building? Do you think you might be able to bring
those keys up with you? I will be arriving in in C'ville
Saturday night (mar 30) and will probably want to start
work on Sunday morning.

Mark

From VM Mon Apr 1 15:20:33 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["670" "Mon" "25" "March" "1996" "13:38:41" "-0500" "Alan Bridle" "abridle"
nil "22" "Re: C'ville" "^From:" nil nil "3" nil nil nil nil]
      nil)
Content-Length: 670
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA57642; Mon, 25 Mar 1996 13:38:41 -0500
Message-Id: <9603251838.AA57642@polaris.cv.nrao.edu>
In-Reply-To: <Pine.3.87.9603250915.A8125-0100000@astrosun2>
References: <Pine.3.87.9603250915.A8125-0100000@astrosun2>
From: abridle (Alan Bridle)
To: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
Subject: Re: C'ville
Date: Mon, 25 Mar 1996 13:38:41 -0500

Mark R. Swain writes:
 > Alan,
 >
 > Who should I talk to about getting a key to my old office and
 > the building? Do you think you might be able to bring
 > those keys up with you? I will be arriving in in C'ville
 > Saturday night (mar 30) and will probably want to start
 > work on Sunday morning.
 >

To play it safe, contact Amy Shepherd.

I will get back to you on Tuesday evening re details. I am
having some medical tests done on Tuesday afternoon. I am
not expecting anything untoward but my doc wants to see the
results before he okays me for traveling out of town. If
there are any surprises we may need to do some last-minute
rearranging.

A.

From VM Mon Apr 1 15:21:34 1996
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
      ["519" "Mon" "25" "March" "1996" "18:23:40" "-0500" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" "<Pine.3.87.9603251840.A8222-0100000@astrosun2>"
"14" "JET" "^From:" nil nil "3" nil nil nil nil]
      nil)
Content-Length: 519
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA49390; Mon, 25 Mar 1996 18:38:38 -0500
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.5/8.7.1/CV-2.1) with SMTP id SAA16919 for
<abridle@polaris.cv.nrao.edu>; Mon, 25 Mar 1996 18:38:37 -0500 (EST)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id SAA04954 for
<abridle@polaris.cv.nrao.edu>; Mon, 25 Mar 1996 18:36:45 -0500
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
SAA08254; Mon, 25 Mar 1996 18:36:43 -0500
In-Reply-To: <9603251838.AA57642@polaris.cv.nrao.edu>
Message-Id: <Pine.3.87.9603251840.A8222-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: Alan Bridle <abridle@polaris.cv.nrao.edu>
Subject: JET
Date: Mon, 25 Mar 1996 18:23:40 -0500 (EST)

Alan,

As I understand it, the JET program divides the model jet into 1301 cells along 131 lines of sight. Does this mean that size of the grid varys along different lines of sight (ie, the grid is smaller in one axis at the edge of the jet than the grid is at the center of the jet)?

Best wishes for the medical tests. Don't risk anything to come up for the defense. I would like to have you there but not at the cost of possible medical problems. We could have you sit in by telcon if we needed to.

Mark

From VM Mon Apr 1 15:21:36 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["527" "Tue" "26" "March" "1996" "02:01:26" "-0500" "Alan Bridle" "abridle"
nil "14" "Re: JET" "^From:" nil nil "3" nil nil nil nil]
      nil)
Content-Length: 527
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA22423; Tue, 26 Mar 1996 02:01:26 -0500
Message-Id: <9603260701.AA22423@polaris.cv.nrao.edu>
In-Reply-To: <Pine.3.87.9603251840.A8222-0100000@astrosun2>
References: <9603251838.AA57642@polaris.cv.nrao.edu>
      <Pine.3.87.9603251840.A8222-0100000@astrosun2>
From: abridle (Alan Bridle)
To: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
Subject: Re: JET
Date: Tue, 26 Mar 1996 02:01:26 -0500

Mark R. Swain writes:
 > Alan,
 >
 > As I understand it, the JET program divides the model jet into 1301 cells
 > along 131 lines of sight. Does this mean that size of the grid varys
 > along different lines of sight (ie, the grid is smaller in one axis at
 > the edge of the jet than the grid is at the center of the jet)?
 >

No, the cells are of constant size.. there are simply fewer of them that
intersect emission as you go to the edge of the jet. I.e. the grid is a cube.
The cylindrical jet sits within it.

A.

From VM Mon Apr 1 15:21:38 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["500" "Tue" "26" "March" "1996" "08:59:06" "-0500" "Alan Bridle" "abridle"
nil "18" "Defense arrangement" "^From:" nil nil "3" nil nil nil nil]
      nil)
Content-Length: 500
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.03)
          id AA32621; Tue, 26 Mar 1996 08:59:06 -0500
Message-Id: <9603261359.AA32621@polaris.cv.nrao.edu>
In-Reply-To: <Pine.3.87.9603251840.A8222-0100000@astrosun2>
References: <9603251838.AA57642@polaris.cv.nrao.edu>
      <Pine.3.87.9603251840.A8222-0100000@astrosun2>
From: abridle (Alan Bridle)
To: dmw@isis.pas.rochester.edu
Subject: Defense arrangement
Date: Tue, 26 Mar 1996 08:59:06 -0500

Mark R. Swain writes:
 > Alan,
 >
 > Best wishes for the medical tests. Don't risk anything to come up for
 > the defense. I would like to have you there but not at the cost of
 > possible medical problems. We could have you sit in by telcon if we
 > needed to.
 >
 > Mark
 >

Dan, is a telecon a viable alternative? I hope to have my own
situation clear by this afternoon but on top of this my father-in-law
died this morning so it is an unfortunate time for me to be away
from home.

A.

From VM Fri May 17 15:30:19 1996
X-VM-v5-Data: ([nil nil nil nil t nil nil nil nil]
["348" "Mon" "6" "May" "1996" "09:50:36" "-0400" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" "<Pine.3.87.9605060936.A12523-0100000@astrosun2>"
"10" "ApJ ltr" "^From:" nil nil "5" nil nil nil nil]
nil)
Content-Length: 348
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.04)
id AA62496; Mon, 6 May 1996 09:57:32 -0400
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.5/8.7.1/CV-2.1) with SMTP id JAA05184 for <abridle@nrao.edu>;
Mon, 6 May 1996 09:57:31 -0400 (EDT)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id JAA10099 for <abridle@nrao.edu>; Mon, 6
May 1996 09:56:53 -0400
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
JAA12624; Mon, 6 May 1996 09:56:51 -0400
Message-Id: <Pine.3.87.9605060936.A12523-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: abridle@nrao.edu
Subject: ApJ ltr
Date: Mon, 6 May 1996 09:50:36 -0400 (EDT)

Alan,

I have not had a chance to make a draft of the ApJ letter yet -- but I want to. I'll try to have a draft together by the end of May. Gordon has been keeping my busy; I've been up to Rochester twice to test mesh for our filters and today I'm off to NASA Ames for a week to learn how assemble and cool down the bolometer dewar.

Mark

From VM Fri May 17 15:30:24 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
["799" "Mon" "6" "May" "1996" "10:08:31" "-0400" "Mark R. Swain"
"swain@astrosun.tn.cornell.edu" nil "24" "Re: 3C 353 (fwd)" "^From:" nil nil "5"
nil nil nil nil]
nil)
Content-Length: 799
Received: from cv3.cv.nrao.edu by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.04)
id AA44381; Mon, 6 May 1996 10:13:43 -0400
Received: from astrosun (ASTROSUN.TN.CORNELL.EDU [128.84.242.46]) by
cv3.cv.nrao.edu (8.7.5/8.7.1/CV-2.1) with SMTP id KAA05533 for <abridle@nrao.edu>;
Mon, 6 May 1996 10:13:41 -0400 (EDT)
Received: from astrosun2.tn.cornell.edu (ASTROSUN2.TN.CORNELL.EDU [128.84.242.38])
by astrosun (8.6.12/8.6.12) with ESMTP id KAA10215 for <abridle@nrao.edu>; Mon, 6
May 1996 10:13:04 -0400
Received: (swain@localhost) by astrosun2.tn.cornell.edu (8.6.12/8.6.12) id
KAA12685; Mon, 6 May 1996 10:13:03 -0400
Message-Id: <Pine.3.87.9605061031.A12631-0100000@astrosun2>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
From: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
To: abridle@nrao.edu
Subject: Re: 3C 353 (fwd)
Date: Mon, 6 May 1996 10:08:31 -0400 (EDT)

I thought you would find this interesting. Apparently, 3C 353 is a
little more like a typical FR II (for it's optical luminosity) and less
like a transition FRI/II source than the radio power alone might suggest.

---------- Forwarded message ----------
Date: Fri, 26 Apr 1996 16:56:57 -0600 (MDT)
From: Frazer Owen <fowen@aoc.nrao.edu>
To: swain@astrosun.tn.cornell.edu
Subject: Re: 3C 353

Mark,

If I am interpreting my notes right for the diagram, I have
the Log (luminosity) at 20cm (H_0=75) as 26.00. For M_24.5(R), I have
-22.8. This puts 3C353 at a fairly typical optical luminosity for a
radio galaxy, about 1 magnitude brighter than L_*. In the diagram it
falls about 1 in the log above the FR I/II break, in fact right in
middle of the the II's have plotted at -22.8.

---Frazer

From VM Fri May 17 15:30:37 1996
X-VM-v5-Data: ([nil nil nil nil nil nil nil nil nil]
      ["880" "Mon" "6" "May" "1996" "13:39:26" "-0400" "Alan Bridle" "abridle" nil
"22" "Re: ApJ ltr" "^From:" nil nil "5" nil nil nil nil]
      nil)
Content-Length: 880
Received: by polaris.cv.nrao.edu (AIX 3.2/UCB 5.64/4.04)
          id AA20052; Mon, 6 May 1996 13:39:26 -0400
Message-Id: <9605061739.AA20052@polaris.cv.nrao.edu>
In-Reply-To: <Pine.3.87.9605060936.A12523-0100000@astrosun2>
References: <Pine.3.87.9605060936.A12523-0100000@astrosun2>
From: abridle (Alan Bridle)
To: "Mark R. Swain" <swain@astrosun.tn.cornell.edu>
Subject: Re: ApJ ltr
Date: Mon, 6 May 1996 13:39:26 -0400

Mark R. Swain writes:
 > Alan,
 >
 > I have not had a chance to make a draft of the ApJ letter yet -- but I
 > want to. I'll try to have a draft together by the end of May. Gordon
 > has been keeping my busy; I've been up to Rochester twice to test mesh
 > for our filters and today I'm off to NASA Ames for a week to learn how
 > assemble and cool down the bolometer dewar.
 >

Have a good trip. I'm working with Robert on the 3C31 modeling at the moment
and we are having some success while also discovering a few remaining
limitations of the 2-d shear layer model. I'll be on vacation for
Friday and next Monday. End of May would be an excellent time for me to
get into working on your draft.

The Alabama proceedings were submitted last week, they will be Vol.100 of the
series. Final versions of all papers are available from the conference
home page.

Cheers, A.