

DEPARTMENT OF ASTRONOMY • TELEPHONE (517) 353-4540

Sept. 19, 1975.

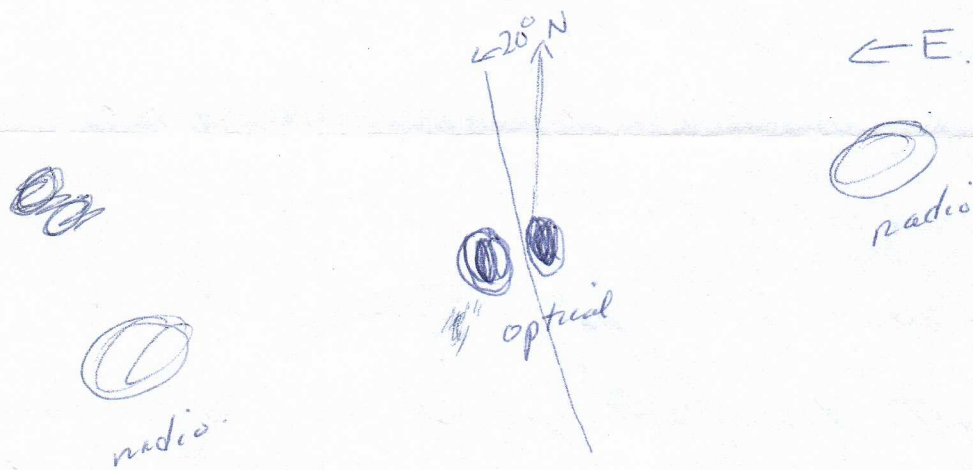
Dear Alan;

I must report that my trip to KPNO was very close to a total failure. I was hit on the head by a baseball sized hail stone the first afternoon and the rest of the run went accordingly: Rain, hail, fog, rain

In a really brave attempt I took four image tube H α plates of bright sources through the fog the last night. The 26 k volt power source was sending beautiful blue ~~arc~~ arcs all over the dome and - as I discovered when I developed the plates - defocusing the image tube in the process. Results - lovely trailed images of galaxy nuclei. I will not get another chance at the project for a year - it will be in Groningen from Nov 1975 - Sept 1976. If you know of any one who is interested in trying these luck hell then to write me and I'll give them all the advice I can think up free of charge.

I did get one useful fact from my run. You might find it interesting. A 16^{mm} spectrum taken

with the 4" telescope shows Cyg A to have a velocity field perpendicular to the axis joining the optical blobs which could be rotation. (or expansion - but not so likely) The configuration is like this:



The slit was in P.A. 20° and shows emission lines which are either rotating or the result of an explosion (probably the former). If rotation the axis is aligned with the radio and optical blobs. That makes 3. - Cyg A, Cent A and 3C 33.

Soel got 16 min out of 9 writes. ugh.

So much for optical astronomy.

Best wishes

Sue Smolin

(P.S. Sorry I spelled your name wrong in the first letter.)

MICHIGAN STATE UNIVERSITY

COLLEGE OF NATURAL SCIENCE
DEPARTMENT OF ASTRONOMY AND ASTROPHYSICS

EAST LANSING • MICHIGAN • 48824

Aug 12, 1975.

Dear Alan,

I returned from Palomar yesterday to find a KANO observing schedule in my mail box. They gave me 4 notes to do ~~either~~ the filter photography "we" had proposed ~~or~~ direct photometry (to calibrate some direct plates of radio galaxies in clusters I took with the 48" Schmidt). I think the wise thing for me to do is try and do photometry if the weather is good, photography if it is not. I will let you know how it comes out and send interesting things if I get any good, direct photos. If the project does work it will need two more observing runs to cover the rest you sent me (Solar interference - I guess you might call it.) I will be in the Netherlands next year but might be able to get a student here to carry it on.

Best wishes
Sue Anderson

NATIONAL RADIO ASTRONOMY OBSERVATORY

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TWX 710-938-1530

EDGEMONT ROAD
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c/o KITT PEAK NATIONAL OBSERVATORY
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TUCSON, ARIZONA 85717
TELEPHONE 602-795-1191

April 7, 1975

Dr. S. M. Simkin,
Department of Astronomy,
Michigan State University,
East Lansing, Michigan 48824

Dear Susan,

Thanks for the copy of your observing proposal to KPNO. My optical observing and darkroom experience was acquired at Michigan many moons ago when I spent a summer as spectroscopic observer on the 37-inch and when I did a bit of photometry with their 24-inch. I have never been to Kitt Peak or done any direct photography, but I am very interested in accompanying you to KPNO if you think that my meager experience would make me more of a help than a hindrance. Alan's funding is a bit tight this year, but a trip to Kitt Peak can probably be squeezed in. Perhaps when you get the observing dates we should discuss whether and how we can assist you.

Bev and Derek Wills have sent us a few more galaxy redshifts. These are noted in red on the updated version of the bright galaxy list enclosed.

Our observing here is going well and if the NRAO computer stays healthy we should be producing many more models of radio structures over the next few months. When we confirm a number of additional identifications with bright galaxies, we'll send a new list.

Regards,

George Brandie

DEPARTMENT OF ASTRONOMY • TELEPHONE (517) 353-4540

1 April 1975

Dr. Alan Bridle
National Radio Astronomy Observatory
P.O. Box 2
Green Bank, WV 24944

Dear Alan:

Enclosed is a copy of my observing proposal to KPNO. The list you sent was a great help. I have asked KPNO to let me have an accomplice on the trip in the Fall. You said George Brandie is working on the observational side of your project. I don't know whether you meant optical or radio but if he has had some experience with photography and would like to go to Kitt Peak for a week he is welcome to come. If not, I will drag along a grad student from MSU. It is very difficult to get maximum use out of the telescopes with only one person, so a second is almost a necessity. To be candid (which I always am) I have no money to pay a grad student's way and would rather have an enthusiastic (and self-funded) person along who is also involved in the project.

Thanks again. I will know how the proposal fares by June 15 or so and will let you know.

Best Wishes,



Susan Simkin

SS:skw

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25 March 1975

Dr S.M. Simkin,
Dept. of Astronomy,
Michigan State University,
East Lansing, Mich. 48824.

Dear Susan,

Here is a preliminary list of bright galaxies for which we have radio structural data, covering the full 24-hour range to give an idea of the composition of the sample we should be able to generate. The columns are as follows:

1. Our observing name for the source - Parkes notation with the last digit specifying decimal degrees of declination.
2. The NGC, IC, or UGC (Uppsala) number of the identification.
3. Estimate of m_{pg} - not our own, but scavenged from various lists and so an inhomogeneous set. A list of our own estimates will emerge in due time.
4. Redshift if known to us, should be fairly complete for redshifts from the literature.
5. A rough classification of radio morphology from our data. C: some compact structure (less than about 2 arc sec), usually a central component on the basis of which we accept the identification. X: some extended structure (greater than about 10 arc sec) on the basis of which we have a measurable overall radio elongation. C only means we will be doing longer-baseline interferometry in the future. X only means the identification will rest on a radio centroid position.
6. and 7. Our present best estimate of the radio position of either a central component or the radio centroid (mainly the former), epoch 1950. These are of variable accuracy from about 2 arc sec at worst to 0.5 arc sec at best, and will be subject to some evolution as we continue to acquire data.
8. Sundry notes, including 3C names of radio sources where appropriate.

The list is preliminary in the sense of being ^{the} identifications we regard as most credible on the basis of our present data. It should approximately double when we have all our radio data in hand (our main remaining observing run is in the first two weeks of April). The data yet to come are those which will give us the best sensitivity to the weak compact components that will be the most reliable guide to the identifications. The time-scale for reductions and preparation of a more complete list of this kind will be about three months.

As about 75% of the galaxies have measured redshifts and about 75% of the identifications are based on compact components, it looks as though we can come up with a good sample. At the present time we do not have finding charts for the identifications, but it will be easy to produce these this summer if needed.

Bev Wills has volunteered to do spectroscopy on the brighter galaxies with compact components for which we do not have redshifts, so there will be a possibility of completing the sample.

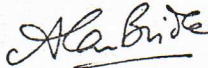
I hope this arrives in time, and gives the right sort of information, for

you to generate the observing proposal. I am sure we will all benefit by improving co-ordination of optical and radio work on these beasts.

To put you fully in the picture of who comprises the radio Mafia with whom you are now entangled, our group consists of myself, George Brandie and Bert Guindon from Queen's University, and Ed Fomalont from NRAO. Bert is a Ph.D. student working partly on the radio observations and partly on source theory (Dick Henriksen is also implicated in that at Queen's). George is a post-doc working entirely on the observational side. When we get involved in the VLB observations of the compact components, Ken Kellermann will also be implicated. The permanent address for myself, George and Bert is: Astronomy Group, Dept. of Physics, Queen's University at Kingston, Ontario K7L 3N6, Canada. Until mid-April, however, we shall be in Green Bank.

Let's hope this will prove to be one of the better things to come out of Bill Saslaw's meeting !

With best wishes,



Alan Bridle

	#	NAME	\hat{M}_{pg}	Z	RADIO		α		δ		NOTES	
					C	X	(1950.0)		(1950.0)			
							h	m	s	o	'	"
1.	0055+300	NGC315	12.5	0.0167	✓	✓	00 55 05.62	30 04 57.0				
2.	0104+321	NGC383	13.5	0.017	✓	✓	01 04 39.18	32 08 44.4	3C31			
3.	0108-142		~16	0.0518	x	✓	01 08 39.7	-14 13 33				
4.	0111+021	UGC773	~16	0.0470	✓	x	01 11 08.54	02 06 25.3				
5.	0116+319		15	0.0586	✓		01 16 47.2	31 55 06	Asymmetric, interacting?			
6.	0206+355	UGC1651	15	0.0374	✓	✓	02 06 39.32	35 33 42.3	Asymmetric core			
7.	0217+017	UGC1797	15		x	✓	02 17 24.4	01 42 00				
8.	0238-084	NGC1052	12		✓		02 38 37.26	-08 28 06.0				
9.	0258+350	NGC1167	14	0.016	✓		02 58 35.40	35 00 32.2				
10.	0305+039	NGC1218	14	0.0289	✓	✓	03 05 49.09	03 55 13.4	3C78			
11.	0331+391	UGC2783	14		✓	✓	03 31 00.94	39 11 23.3				
12.	0502-103		15.5		✓	✓	05 02 31.12	-10 18 58.0				
13.	0712+534		14		✓	✓	07 12 42.15	53 28 30.4				
14.	0755+378	NGC2484	15	0.0433	✓	✓	07 55 09.13	37 55 20.2				
15.	0832+347		~16		✓	✓	08 32 05.27	34 44 27.1				
16.	0836+299		~15		x	✓	08 36 58.6	29 59 33	Weak unresolved source nrb = faint red obj			
17.	0938+399		~16	0.107		✓	09 38 18.2	39 58 19	3C223.1			
18.	1003+351		15	0.0988	✓	✓	10 03 05.39	35 08 47.9	3C236			
19.	1113+295		15	0.0485	✓	✓	11 13 53.49	29 31 40.8				
20.	1137+180	NGC3801	13.5	0.0105	✓	✓	11 37 41.61	18 00 14.7				
21.	1146+595	NGC3894	13		✓	x	11 46 10.41	59 41 36.6	Possible knots in envelope?			
22.	1216+061	NGC4261	12	0.0697	✓	✓	12 16 50.00	06 06 08.8	3C270			
23.	1222+131	NGC4374	11	0.00293	✓		12 22 31.6	13 09 49	3C272.1			
24.	1227+082	NGC4472	10	0.00285	✓	✓	12 27 14.1	08 16 37				
25.	1251+278		15.5	0.0857	✓	✓	12 51 45.7	27 53 55	3C277.3			
26.	1316+299		14.5	0.0728	✓	✓	13 16 43.0	29 54 20				
27.	1322+366	NGC5141	14	0.0175	✓	✓	13 22 35.33	36 38 18.8				
28.	1346+268		14.5	0.0630	✓	x	13 46 33.92	26 50 27.2				
29.	1353+054	NGC5363	11.5	0.0368	✓	?	13 53 36.45	05 29 56.6				
30.	1407+177	NGC5490	13.5		x	✓	14 07 35	17 46 48	Centroid of brightest cpe, ~30" x 25"			
31.	1422+268		15		x	✓	14 22 26	26 51 00				
32.	1443+178		15.5		✓	✓	14 43 38.44	17 50 59.1				
33.	1448+634	IC1065	15	0.0416	✓	✓	14 48 17.63	63 28 37.1	3C305			
34.	1514+072	UGC9799	15	0.0351	✓	✓	15 14 17.02	07 12 17.4	Possible knots in envelope?	3C317		
35.	1602+240	NGC6051	15	0.0318	✓	✓	16 02 48.67	24 04 05.1				
36.	1626+396	NGC6166	14	0.0303?	✓	✓	16 26 55.25	39 39 36.4	Multiple nuclei, 3C338			
37.	1650+024	NGC6240	15	0.026	✓	✓	16 50 27.85	02 28 57.6				
38.	1726+318		~15.5?	0.1670	✓	✓	17 26 24.76	31 48 27.0	3C357			
39.	1743+557	NGC6454	13	0.0312	x	✓	17 44 00.4	55 43 25				
40.	1842+455		13.5	0.0917	x	✓	18 42 35.4	45 30 23	3C388			
41.	2117+605		15	0.0549	x	✓	21 17 03.1	60 35 42	3C430			
42.	2254+354		16	0.1178	?	✓	22 54 25.2	35 25 11				
43.	2342+294		15.5	0.1306	✓	?	23 42 33.05	29 26 06.4				

(30) (33) (34)

OBSERVING TIME REQUEST

- 1) Susan M. Simkin
- 2) Department of Astronomy & Astrophysics
Michigan State University
East Lansing, MI 48824
tel: (517) 353-8661
- 3) Title: "Optical Properties of Galaxies Associated with Extended Radio Sources"
- 4) Source of Funds: National Science Foundation
- 5,6) Scientific Background and Details of the Program:

I. This is a request for continuation of a program begun in January 1975. The original proposal is included. In January enough data were obtained to:

(a) Measure the B-V color of the intergalactic bridge associated with 3c40 (NGC 545-541) and analyze the emission line spectrum of a compact blue object embedded in that bridge (paper submitted to Ap. J. Letters). In addition, the data seem sufficient to: (b) locate the rotational axis for 3c270 and (possibly) 3C272.1 and 278. Poor weather prevented the acquisition of high quality data, however. Experience in January indicates that the greater scale along the spectrograph slit available at the 4m cassegrain focus is necessary for a good determination of the rotation axes of the stellar systems and that prime focus photography with the 4m is best suited for studying the inner regions of these objects on plates taken in good seeing. Thus, four nights are requested on the 4m to be used either for spectroscopy at the cassegrain focus or prime focus photography if the seeing conditions are good enough to warrant such use.

II. In addition, four nights are requested on the #1-36" telescope to be used with the direct image tube camera at f 13.5 for photography of a more extensive group of radio sources in the H_{α} line and in the continuum adjacent

to H_{α} . These plates will be analyzed with the MSU Joyce-Loebl isodensitometer to determine: (a) The relation of their apparent major axes to their radio structure, and (b) What differences exist, if any, between the H_{α} images and the continuum images in eccentricity and orientation of the apparent major axes.

Part II of this program is being done in collaboration with Drs. Alan Bridle, George Brandie and an extensive group of radio astronomers from Queen's University and NRAO who have provided accurate positions for the central radio galaxies.

7) Telescopes and Auxiliaries requested:

4m telescope: Cassegrain spectrograph (20 \AA/mm to 100 \AA/mm Blue) with provision for changing to prime focus photography.

#1-36" telescope: Carnegie image tube direct camera; UBV R and set of H_{α} interference filters.

In both cases, N_2 Baked IIIaJ plates will be used as well as IIaD plates with the 4m. Sensitometers and the usual darkroom supplies will be needed.

8) Time requested:

Four nights on the 4m.

Four nights on the #1-36".

Dark of the moon.

For compatibility with January's run, the period Sept. 1-10 is best. Prior commitments make this the most convenient also. Alternatively, Nov. 27-Dec 4, or Dec. 27-Jan. 3, are possible dates, the Dec. 27-Jan. 3 period being preferred over the Nov. 27-Dec. 4.

9) As before, the PDS microdensitometer in Tucson will be needed to reduce the spectra and the CDC computer to translate the tapes.

10) The extended outer regions of these objects are being done on the 48" Schmidt. This instrument is not suitable for the projects proposed here, however.

If the requested time is granted, I wish to have a second astronomer accompany me on the run since previous experience with both the 36" image tube camera and the 4m suggests that work can be done much more efficiently with two observers.

