From: EXOS%"JAMES.CORDES@PULSAR.TN.CORNELL.EDU" 12-FEB-1990 12:59
To: ABRIDLE
Subj: 10 MHz

Return-path: <JAMES.CORDES@PULSAR.TN.CORNELL.EDU>
Received: from cv3 (NRAO.EDU) by cvax.CV.NRAO.EDU
id 0000BEAD002 ; Mon, 12 Feb 90 12:57:38 EDT
Return-Path: <JAMES.CORDES@PULSAR.TN.CORNELL.EDU>
Received: from PULSAR.TN.CORNELL.EDU ([128.84.242.60]) by NRAO.EDU (4.0/DCW-2o)
id AA07706; Mon, 12 Feb 90 12:58:15 EST
Message-Id: <9002121758.AA07706@NRAO.EDU>
Date: 12 Feb 1990 11:25:00 EST
To: abridle@nrao.edu
X-Vms-Original-To: INET%"abridle@nrao.edu"

Dr. Alan Bridle
NRAO

Dear Alan:

I wanted to follow up on our discussion at the low frequency workshop
last month; namely, your question whether your low frequency (10MHz,
I believe) interferometry of extragalactic sources would be valuable
for testing predictions about interstellar scattering. I would
like to again say `yes' and would like to propose that we work
together on this.

I am now concocting a paper that puts together
all of the existing pulsar scintillation and extragalactic source
angular broadening obs. These are the data I used to prepare my
talk at the workshop.
In another month or so, I can send you a preprint.
I have fitted a somewhat idealized model
for the galactic distribution to the data and have used this model
to make predictions. Perhaps the least constrained directions
are those looking directly out of the galactic plane and towards the
anticenter: because these are all `high' frequency obs. like
> 327 MHz! So... your data will take advantage of the wavelength**2
lever to allow better constraints on high latitudes. These are important
for estimating the galactic scale height of the turbulence.
Let me know what you think. I feel that your data could be very valuable
and could easily lead to a publication where we would discuss these
issues. ------Jim

From: CVAX::ABRIDLE 12-FEB-1990 13:30
To: GATEWAY::"james.cordes@pulsar.tn.cornell.edu",ABRIDLE
Subj: 10 MHz data

I dug back into my truly ancient records after the meeting (the data are from my thesis work in Canada in 1965!). Unfortunately, I find that less of the original notes has survived my moves back to England, back to Canada, and to Virginia, than I thought. The data are from observations of transits of extragalactic sources with the 2-degree beam of the 10 MHz T-array at Penticton. I was surveying for discrete sources and made hand measurements of peak and integrated intensities from chart records - nothing from the output was ever digitized. I'm afraid all I have got left of the data are the pre-calibration flux densities and apparent positions, not the width measurements from the individual source transits. I suspect that these found their way back to England with me and got left there when I moved back to this continent. In any case, I'm afraid the detailed transit-by-transit information is no longer around.

So what there is to fall back on is the statement that we did indeed form a 2-degree beam looking toward the anticenter region, i.e. we did detect low-latitude sources without noting significant (i.e. a degree or two) broadening. The list of sources for which this statement must be correct is the list I analyzed in Nature, 221, 648 (1969). The only member of that group for which I have recorded an angular size at 10 MHz was the Cygnus Loop (there were 4 supernova remnants in the list I used to try to estimate free-free optical depths), for which I saw a size of 1.2 (+0.2, -1.2!) degrees at 10 MHz after deconvolution. I think the best way to make use of the information, if it is indeed a useful constraint, would be to exclude any scattering models that would predict scattering disks much larger than 2 degrees in many directions toward the Anticenter at 10 MHz. They would be inconsistent with the existence of my thesis measurements in that direction.

I'll dig a bit deeper for the apparent width data, but I'm not hopeful.

A possibly better source would be the 22 MHz data from Penticton at the same epoch. The 22-MHz array formed a 1.1 degree beam and its output was digitized. The data were also the property of the Canadian government and so are probably still in storage on the original site (come to think of it, there is probably a crate of chart recordings with my data in it somewhere at Penticton). But the point is that the 22-MHz project covered more of the sky and found its way into a computer, so it may be a lot more useful now to get leverage on the distribution of upper limits to the scattering disk size in different directions. The person to contact would be Rob Roger at DRAO, Penticton.