



NRAO NEWSLETTER

1 July 1996

No. 68

GREEN BANK

NRAO SYSTEMS FOR THE GBT

Work by the GBT Electronics group continues on several receiver front-ends, the GBT spectrometer, parts of the IF and LO systems, and several other vital parts of the GBT receiving electronics. The microwave design of the 1.15-1.73 GHz front-end has been complete for some time, and almost all of the construction components are in hand. A moding problem was encountered with the orthomode transducer for this front-end, and work is underway to correct the problem. Some design and fabrication of radiation shields has yet to be done. Once these problems are solved, assembly of the dewar will begin. A rigid-foam and epoxy-fiberglass coating has been applied to the 1.15-1.73 GHz Gregorian feed-horn. This coating greatly increases the rigidity of the 10-foot long horn, as well as providing thermal insulation. A microwave design for the 1.73-2.6 GHz front-end has been started, and a prototype 40-52 GHz single-beam assembly is well underway. Work on the spectrometer digital correlator proceeded without serious obstacles, and despite manpower shortages progress was made on the spectrometer IF section.

A serious technical problem with the transmission of IF signals over optical fibers was recognized in December during tests of the GBT IF systems on the 140 Foot Telescope, and study of the causes, as well as investigation of solutions, have been a major focus. The problem involves a change in the polarization of the IF modulated laser light as the fiber is bent or twisted. Because the optical receivers used to demodulate the light are slightly sensitive to polarization, an apparent system gain change correlated with antenna motion was observed. Several solutions to this problem are being evaluated. One promising solution still under investigation is the use of a special type of polarization maintaining fiber.

The development of Monitor and Control (M&C) software continues, with current emphasis on antenna control, local oscillator control, enhancements to the control screens, and the design of a system to manage the interconnections of front-ends, IF/LO, and back-ends. In January the M&C software interface to the contractor servo systems was tested in conjunction with factory acceptance tests of the feedarm servo systems. Additional testing with the actual feedarm mechanisms will occur following field tests by the contractor later this summer, when their servo system is for the first time connected to the actual mechanisms. Initial versions

of the focus-tracking routines were completed. These routines describe how to control the prime focus or the subreflector as the structure deforms under gravity, and will be incorporated in the antenna controller. A simplistic version of the local-oscillator manager was used in integrated tests at the 140 Foot, in order to prove the design concept, doing simple frequency-switched observations on test tones. A production manager is now being developed, incorporating doppler tracking. In addition to the software development underway, an internal review of the M&C hardware design was completed, and the results will be presented to other NRAO experts in late July.

The production of surface actuators and controllers for the Open-loop Active Surface is now complete. Until delivery of the antenna and installation of the surface control hardware begins, little more hardware work remains to be done. The major work yet to be completed for the active surface is software, both for the embedded software which controls the individual actuators and monitors the hardware's health, and for the higher-level software which determines where the actuators should be set in order to achieve the desired surface. Work is now underway on both these tasks.

The metrology group continues to develop and refine the laser rangefinders and associated systems. A problem was encountered with encoders used in the steerable mirror assembly. Correction of the problem necessitated replacement with a different encoder type and some redesign of the assembly. The retrofit delayed progress on our effort to demonstrate integrated operation of several rangefinders tracking a retroreflector mounted on the 140 Foot. However, that effort is again going forward, and we hope to report success later this summer. Four monuments with associated utilities and control hardware are now in place and preliminary versions of the tracking and control software have been tested. In addition to work on the rangefinders, parallel experimental work on a quadrant detector system is underway. It is expected that this system will provide data on feedarm motions in order to assist in our effort to characterize the antenna as well as achieve precision pointing.

R. D. Norrod

HIGH FREQUENCY OBSERVATIONS ON THE 140 FOOT

The Cassegrain receivers now on the 140 Foot Telescope that cover the frequency range from 8 to 26 GHz are scheduled to be removed in April 1997 so that they can be refurbished and installed on the GBT later that year. There is a possibility that the K band system will remain on the 140 Foot through much of 1997, but even if this occurs, it is most probable that the receiver will be equipped with a special-purpose, fixed-frequency LO and be useful only for VLBI after April.

The coming winter is thus likely to be the last in which high frequency spectroscopy is done on the 140 Foot. Anyone planning such work should submit a proposal as soon as possible. The earlier a proposal is received the higher the probability that it can be scheduled before the receivers are removed.

F. J. Lockman

AVAILABILITY OF 140 FOOT TELESCOPE TIME

When the Green Bank Telescope begins operation, the 140 Foot Telescope will cease operations as an NSF supported facility for general users. Ideally, this transition will be gradual, with NSF supported 140 Foot Telescope use tapering off as that support is increasingly directed toward bringing the GBT into operation. Accordingly, we anticipate roughly 25 percent of the 140 Foot Telescope time will be idle in the fourth quarter of 1996, increasing to 100 percent sometime in 1998 when full GBT operations will be achieved.

program would be reimbursed by the SETI Institute. In the interests of fairness to all parties who might have programs related to radio astronomy that could use the 140 Foot Telescope on a cost reimbursable basis, we are calling for proposals that could compete with the SETI proposal. The selection will be based on the quality of the proposed program and the potential beneficial effect of its presence at Green Bank. The deadline for receipt of proposals is July 31, 1996. Interested parties should contact the Associate Director for Administration, NRAO, Charlottesville VA, 804-296-0315.

The Observatory has been approached by the SETI Institute for the use of this idle time. The costs to NRAO of supporting the SETI

F. J. Lockman

FRIEND OF THE 140 FOOT TELESCOPE

As of 1 June 1996, Ron Maddalena left his position as friend of the 140 Foot Telescope to work on various projects for the GBT. Dana Balsler will take over Ron's duties for visitor support; observers should contact Dana with any problems or issues related to spectral line or continuum observing. Ron should be consulted only in extraordinary situations.

On behalf of all 140 Foot users over the past 11 years, I would like to thank Ron for his dedicated service. He has made the telescope one of the most productive and reliable in radio astronomy.

F. J. Lockman

STUDENT'S STELLAR PERFORMANCE RECOGNIZED

Naomi Bates, a recent high school graduate from Franklin, WV, has been working for the last four years in Green Bank on research projects that used the 40 Foot and 140 Foot Telescopes. Naomi was introduced to the Observatory by Paula Waggy, a teacher who was a participant in one of the NSF-funded institutes that Green Bank and West Virginia University administer for teacher enhancement. Every year since then, Sue Ann Heatherly, the Green Bank education officer, has encouraged Naomi to take on challenging projects.

ultimate in science fairs with strong competition from the thousand or so high school students who placed well at their regional science fairs. The prizes Naomi won included the Priscilla and Bart Bok award (from the AAS/ASP) and many scholarships (from Orbital Sciences Corp., the U.S. Navy/Marine Corps., the U.S. Army, and Science Services Inc.). She also won a few expense-paid trips, one of which is to attend the Nobel Prize festivities in Stockholm in December 1996. The trip to Stockholm, one of only two given, is considered the highest honor awarded a student at the ISEF. Although it's difficult to rank her performance, I have the impression that the number and prestige of the awards she received was not matched by any other student.

Last year, Naomi won many awards at science fairs for her project (measuring the rotation of our galaxy with the 40 Foot Telescope using HI spectroscopy), including being named a finalist in the distinguished Westinghouse Science Talent Search. This year, Naomi's school board and NRAO developed a program that allowed her to spend part of the week doing research in Green Bank. Her research topic involved using the 140 Foot to detect high velocity gases in other galaxies. It has been my privilege to be her mentor.

This summer, Naomi is working full time in Green Bank. We have just presented a poster at a meeting of the AAS in Madison, WI, and there are plans to publish it. Then, in the fall she will be a first-year student at Princeton where she will major in physics. Those of us who have worked with Naomi over the years are very proud of her achievements and wish her success with her future endeavors.

Naomi won eight awards for this year's project at the recent International Science and Engineering Fair. The ISEF is the

R. J. Maddalena

VLBA/VLBI

SPACE VLBI

Preparations to support joint observations by the VLBA and global ground arrays with VSOP, the Japanese Space VLBI mission, are approaching completion. The scope of the "NRAO Space VLBI Project," which includes enhancements to the VLBA correlator and to AIPS, and operations and user support, was described in some detail a year ago in NRAO Newsletter No. 64. This note describes the current state of readiness in each of these areas. Tests of the correlator enhancements which give us some confidence in their performance are also mentioned.

Spacecraft orbit ephemeris software provided by JPL has been integrated into the VLBA correlator's operational system. This capability was demonstrated convincingly by the "Kitt Peak in Space" test. Using an orbit file describing the non-physical orbit of one VLBA station around the terrestrial rotation axis, the correlator reproduced closely the fringes obtained with its conventional wavefront model. The small differences are attributable to the absence of polar-motion and tropospheric components in the spacecraft ephemeris model.

Correction of the recorded time tags for errors measured in the two-way phase transfer loop has also been incorporated into the correlator's operational software. A "Simulated Space VLBI Experiment" was performed recently using phase transfer links from the Green Bank Space VLBI tracking station to Surfsat, a test satellite built by Caltech undergraduates. The transferred frequency standard replaced the normal reference at the 140 Foot Telescope. Fringes on baselines to several VLBA stations then showed that the time corrections are being measured accurately at the Green Bank tracking station, and applied properly at the VLBA correlator, except for a few minor discrepancies still under study.

Expansion of the delay-rate range in the correlator's model-computation hardware was completed several years ago. New data-storage hardware and control software have been installed to expand the output data rate limit at least to the original specification of 500 kB/s, and currently is under test. Operation of the output transversal filter, to exploit that output capacity more effectively in terms of residual fringe rate, has been implemented

and also is under test. The only element of the fringe rate window expansion still under development is the baseline-dependent integration capability.

Finally, we are attempting to recorrelate the decade-old TDRSS experiment. These tapes were recorded in the wide-track Mark 3 format, now obsolete, which has a different head pitch from the modern Mark-3A/VLBA format. Nevertheless, we have been able to read subsets of the track groups written. The next step is to obtain orbit and time correction files (in modern format) from JPL.

In AIPS, the baseline-oriented fringe-fitting tasks BLING and BLAPP have been included in the standard release for some time. Further enhancements to BLING currently are under development. The fringe-rate mapping task FRMAP is also included in the standard AIPS release. An initial version of the interactive source model-fitting task, SLIME, is available. It includes facilities for interactive model construction and modification, automatic least-squares optimization of model parameters, and plotting of observed and model amplitude and phase. Software to generate simulated Space VLBI data, nearing completion, will be used for more realistic tests of all these tasks.

As the technical developments are completed, we have been able to devote increasing effort to preparing for Space VLBI operations. This includes ensuring that we will receive the VLBI tapes and all the necessary files – schedules, space and ground telescope observation logs, orbit kernels, and time correction tables – on time and in the proper formats. One dry run of ground facilities involved with VSOP was carried out in February, with mixed success. A second occurred in mid-June, with nominal two-week tape delivery specified for VSOP observations.

We have filled some of the positions planned for post-launch operational support. Two staff scientists, Mark Claussen and Jim Ulvestad, are in place for user support in analysis of VSOP observations; an assistant to the VLBA scheduler is in training.

J. D. Romney

VLBA STATUS

During the first half of 1996 (up to June 12, 1996), there were 153 projects (2097 observing hours) processed on the VLBA correlator. Of these projects, 25 were tests. This represents about a 30 percent increase in throughput compared with the same period last year. There are only two old global projects yet to be correlated from the backlog.

Observations made on March 8, 1996, using the Mark 4 prototype formatter and the VLBA formatters, were successfully correlated on the VLBA Correlator during the period April 17-20, 1996. The results confirmed that the Mark 4 formatter could generate various fan-out and 2-bit modes and the VLBA correlator could reproduce the Mark 4 tape frame. The details of the tests and the results are available in the VLBA Test Memo #52.

The VLBA sites started recording data at high density (56.7 Kbits/inch/track compared with 34.0 Kbits/inch/track at low density) on May 1, 1996. This will increase the storage capacity of thin tapes by about 70 percent and will allow recordings at a sustained rate of 128 mbytes/secs for about 21 hours. The playback drives on the VLBA correlator are capable of reading data recorded at high density on thin tapes and at low density on thick tapes. They are **not** capable of reading data recorded at low density on thin tapes.

R. C. Bignell

VLBI NETWORK CALL FOR PROPOSALS

Proposals for VLBI Global Network observing are handled by the NRAO. Global network sessions currently planned are:

Date	Bands	Proposals Due
16 Oct to 14 Nov 1996	1.3 cm, 3.6/13 cm, 6 cm	03 Jun 1996
19 Feb to 12 Mar 1997	0.7 cm, 1.3 cm, 6 cm, 18 cm	01 Oct 1996
21 May to 11 Jun 1997	1.3 cm, 5 cm, 6 cm, 18 cm	01 Oct 1996
10 Sep to 01 Oct 1997	1.3 cm, 6 cm, 18 cm, other?	03 Feb 1997
05 Nov to 26 Nov 1997	1.3 cm, 6 cm, 18 cm, other?	02 Jun 1997

It is expected that European VLBI observing in 1997 will be dominated by observations with the VSOP satellite. Further information about Global Network VLBI observing may be transmitted on the VLBI e-mail exploder (send subscription requests to vlbi-request@nrao.edu).

It is recommended that proposers use a standard coversheet for their VLBI proposals. Fill-in-the-blanks TeX files are available by anonymous ftp from ftp.cv.nrao.edu, directory proposal or via the VLBA home page on the WWW. Printed forms, for filling in by typewriter, are available on request from Betty Trujillo, Socorro.

Any proposal requesting NRAO antennas and antennas from two or more institutions in the European VLBI network constitutes a Global proposal. Global proposals MUST reach BOTH Networks' Schedulers on or before the proposal deadline date; allow sufficient time for mailing. In general, fax submissions of Global proposals will not be accepted. Proposals requesting use of the Socorro correlator must be sent to NRAO even if they do not request the use of NRAO antennas. Proposals for the use of the Bonn correlator must be sent to the MPIfR if they do not request

the use of any EVN antennas. For Global proposals, or those to the EVN alone, send proposals to:

R. Schwartz
Max Planck Institut für Radioastronomie
Auf dem Hugel 69
D 53121 Bonn
Germany

For proposals to the VLBA, or Global Network proposals, send proposals to:

Director
National Radio Astronomy Observatory
520 Edgemont Road
Charlottesville, VA 22903-2475
USA

B. G. Clark

VLA

AOC COMPUTING STATUS

In the VLA re-archiving project, which reformats and copies all VLA data onto Exabyte tape, 1988 data have been finished. This leaves the data from 1984 through 1987. At the current rate of progress, which considerably slowed down by the presence of poor quality tapes from the mid-eighties, we estimate that the project will take another 2 - 3 years to complete. These poor quality tapes are one more justification of the re-archiving effort: in a few years, the data on these tapes might have become unrecoverable. The VLA archive database is accessible via the NRAO home page and contains full header information on all data except for the missing period 1984 - 1987.

For all questions related to visiting Socorro and booking a workstation, please check out the "Socorro Visitor's Information Package" accessible via the Socorro home page

The five year old public IPX workstations Acoma and Isleta were replaced by Sparc Ultra I machines. The names of the machines remain the same, but visitors will appreciate the factor of 5 - 6 increase in speed. These workstations will be allocated primarily to users with large VLBA or VLA data sets. This leaves only three public machines (out of a total of 15) with Sparc IPX-like performance.

After having been vacant for almost six months, the position of AOC system manager was finally filled. We welcome George Martin, who moved to this position from the VLA online group

G. A. van Moorsel

VLA CONFIGURATION SCHEDULE

Configuration	Starting date	Ending date	Proposal Deadline
D	28 Jun 1996	30 Sep 1996	1 Feb 1996
A	18 Oct 1996	30 Dec 1996	3 Jun 1996
BnA	10 Jan 1997	27 Jan 1997	1 Oct 1996 5 pm EDT
B	31 Jan 1997	12 May 1997	1 Oct 1996 5 pm EDT
CnB	23 May 1997	09 Jun 1997	3 Feb 1997 5 pm EST
C	13 Jun 1997	08 Sep 1997	3 Feb 1997 5 pm EST
DnC	19 Sep 1997	06 Oct 1997	2 Jun 1997 5 pm EDT

The VLA is currently scheduling two large surveys. One will be done at night in the DnC and D configurations and will be essentially completed by the end of September, 1996. The other covers the north galactic cap (07^h-17^h) in the B configuration. Observing time in those configurations and LSTs will be much reduced over past practice. On the other hand, observations disjoint with the surveys in those configurations will have more time available for scheduling than has previously been the case.

The maximum antenna separations for the four VLA configurations are: A - 36 km, B - 11 km, C - 3 km, D - 1 km. The BnA, CnB, and DnC configurations are the hybrid configurations with the long north arm, which produce a round beam for southern sources (south of about -15 degree declination)

Approximate Long-Term Schedule

	Q1	Q2	Q3	Q4
1996	C	D	D	A
1997	B	B,C	C	D
1998	A	A,B	B	C
1999	D	D,A	A,B	B
2000	C	C,D	D	A

Observers should note that some types of observations are significantly more difficult in daytime than at nighttime. These include observations at 327 MHz (solar and other interference; disturbed ionosphere, especially at dawn), line observations at 18 and 21cm (solar interference), polarization measurements at L band (uncertainty in ionospheric rotation measure), and observations at 2 cm and shorter wavelengths in B and A configurations (tropospheric phase variations, especially in summer). They should defer such observations for a configuration cycle to avoid such problems. In 1996/97, the A configuration daytime will be about 14^h RA and the B configuration daytime will be about 22^h RA.

Time will be allocated for the VLBA on intervals approximately corresponding to the VLA configurations, from those proposals in hand at the corresponding VLA proposal deadline. VLBA proposals requesting non-NRAO antennas must be sent to the institution operating these antennas. Any proposal requesting NRAO antennas and antennas from two or more institutions affiliated with the European VLBI network is a global proposal, and must be sent to the EVN scheduler as well as to the NRAO. Coordination of observations with non-NRAO antennas, other than members of the EVN and the DSN, is the responsibility of the proposer.

B. G. Clark

Q BAND (43 GHz) ON THE VLA

Fast switching phase calibration will be supported by the on-line system at the VLA for the up-coming A array. The current implementation utilizes offset cards in order to avoid the standard 20 second start-up time between scans. The minimum allowed total cycle time (source+calibrator) is 40 seconds.

Details of the technique can be found in VLA Scientific Memo No. 169. See the NRAO home page or call C. Carilli (505-835-7306) in Socorro for details.

C. Carilli and K. Sowardski

VLA DATA ARCHIVE UPDATE

The list of all sources (excluding calibrators) observed with the VLA is available through the use of an IBM PC compatible program, *vlasors*. The program contains information on observing frequency, position, modes, proposal code, observers, number of antennas, and total observing time, as well as other details.

Observations longer than 10 minutes and up to the end of 1995 are included. Searches can be performed by source position, source name and a few other parameters. The standard VLA calibrator list also is available for searching by position and name.

The current version of the program and data sets are available by: (a) download by anonymous ftp on the NRAO machine *zia* in the directory *pub/vlasors*, (b) download from my personal web page (accessed from the NRAO home page), or (c) by regular mail on floppy diskettes (contact L. Appel at lappel@aoc.nrao.edu or L. Appel, NRAO, PO Box O, Socorro, NM 87801 or 505-835-7310). There are also text versions of the archive and proposal data available in the anonymous ftp area on the NRAO machine *zia* in the directory *pub/vlaarchive*.

R. C. Bignell

12 METER

MAJOR SUMMER SHUTDOWN PROJECTS AT THE 12 METER TELESCOPE

Since there are no major modifications or repairs that must be done this summer shutdown, the 12 Meter will be shutdown for a relatively brief five weeks this summer. We will follow this with an approximately three-week period of system tests before resuming regular observing. During these periods we will do a number of general repair and maintenance tasks, which include:

- Dome inspection and repair;
- Automation enhancements to receiver tuning software;
- Improvements to 8-channel IF system.

J. G. Mangum and D. T. Emerson

ON-THE-FLY ANALYSIS AT NRAO TUCSON

In order for us to provide some assistance with the analysis of OTF data, visiting observers can now make arrangements to use the NRAO Tucson downtown computing services for their OTF analysis. Observers who might benefit particularly from the use of the NRAO-Tucson computing system are those with limited OTF analysis experience, or those whose home computing resources are strained in handling the quantity and processing needs of OTF data. In particular, on-site assistance from the

Tucson 12 Meter scientific staff in the analysis of OTF data may prove helpful. If you are interested in visiting NRAO-Tucson to analyze 12 Meter OTF data, you can work out the details with Jeff Mangum (jmangum@nrao.edu, 520-882-8250 x113)

J. G. Mangum

IN GENERAL

ANNOUNCEMENT

It is a pleasure to announce the appointment of John Webber as Assistant Director – Central Development Laboratory. John's entire career has been in radio astronomy, from graduate school at Caltech, to the University of Illinois, to Haystack Observatory, and more recently, at Interferometrics, Inc. He is particularly well known for his contributions to VLBI. He will join NRAO in July of this year.

John will succeed Mike Balister as head of the CDL. Mike has been with NRAO since May 1966 and has managed the CDL for the last 11 years. We are not only grateful to Mike for all he has done for the instrumentation development effort of the Observatory, but we are also pleased that he has delayed his retirement to continue to help with CDL projects on a part-time basis.

P. A. Vanden Bout

MILLIMETER ARRAY

At the end of the summer the National Science Foundation will decide whether to include the MMA Design and Development Phase in the 1998 budget request. Hoping for a positive decision, we have accelerated efforts of the MDC antenna working group since the antenna prototype is the pacing item of the D&D phase. An initial design concept was completed at the first of June that appears to meet all the requirements of the MMA project, including those recently emphasized by the scientific groups at the Tucson workshop. Over the course of the next sixteen months, the design will be carried forward in increasing detail both by an in-house MDC effort and via industrial consultants. The goal is to have design of the prototype antenna sufficiently complete that it can go to bid at the time that we can expect the initial MMA D&D funding

Tests of the potential MMA sites continue both in Chile and on Mauna Kea. Presently we have several years' transparency data and a year's stability data from Mauna Kea. We also have more than a year of testing data in Chile. Both aspects of this program have been very successful indeed. We are grateful to all those who have been directly involved in the effort as well as to those at the IfA, CSO, NOAO, CTIO, ESO, SEST, and U. Chile who have so generously given their support.

Meanwhile, a great deal of work has gone into planning discussions for MMA partnerships with international groups and with other government agencies. The MMA site group is supporting the efforts of both the Japanese LMSA project and the European Large Southern Array (LSA) project in atmospheric monitoring of other Chilean sites. A promising partnership between the MMA and the LMSA to combine the two instruments periodically each year to create a single array with ten milli-arcsecond angular resolution will be reviewed at a science workshop in the Tokyo area March 17-20, 1997. Initial steps are being taken to evaluate the contribution the MMA can make to facilitate the NASA Origins theme. All these ideas will be presented in detail in forthcoming MMA memos.

Speaking of the MMA memos, let me mention that steps are being taken to distribute the MMA memos electronically. In broad outline the idea is to assure that each MMA memo is available in an electronic version. We will keep a file of e-mail addresses of interested individuals and each time a new MMA memo is issued all those people on the e-mail list will be informed of its existence and told how to avail themselves of it. Details of this plan will be outlined in the next NRAO Newsletter.

R. L. Brown

AIPS++ PROGRESS

In the second quarter of 1996, we proceeded with work aimed towards a beta release of AIPS++ targeted for early 1997. We also worked towards supporting the use of AIPS++ for a number of applications: an HI survey using a multibeam system on the Parkes telescope, as the prime data reduction system for the GBT, and as the prime on-line data inspection system for the new WSRT on-line system, TMS. We have continued development of the infrastructure needed to support these activities, in the Table system, in the User interface, in the Measures system, and in documentation. Work in all of these areas has proceeded reasonably well, although continuing problems with compilers have generally slowed the Project. The most significant obstacle has been continuing difficulties in some areas of design, most particularly the design of the single dish analysis package, this resulting in a delay of a few months in the first tests of a single dish package for the GBT.

A cross comparison of synthesis processing by Newstar and AIPS++ has been performed and confirms that the AIPS++

synthesis package can reproduce the results from Newstar even at very high levels of precision.

First tests of programming AIPS++ by non-expert programmers have also been encouraging, showing that the promises of object-oriented programming are to some extent being realized.

Planning for the beta and first releases is continuing, and a detailed list of the targeted contents of the first beta release has been drawn up. It will include the glish package (the AIPS++ command line interface and base for developing graphical user interfaces); general tools for reading, writing, manipulating, plotting and displaying images and tabular data; the initial version of the synthesis calibration and imaging package; and a tool for very general types of coordinates conversions.

T. J. Cornwell

IAU COLLOQUIUM 164: RADIO EMISSION FROM GALACTIC AND EXTRAGALACTIC COMPACT SOURCES

This colloquium will mark the 30th anniversary of the first successful experiments in Very Long Baseline Interferometry (VLBI). This technique has developed at a rapid pace and produced spectacular results in a variety of astronomical research areas by steadily advancing towards higher resolution, sensitivity, and image quality. Several regional arrays and the global VLBI array are routinely available, and the first fully dedicated VLBI array, NRAO's Very Long Baseline Array, now is operating with great success. The first space VLBI mission (VSOP) is underway and expected to begin scientific operation in early 1997. New VLBI antennas, advanced recording systems, and new correlators are under construction around the world, and new methods for data processing and analysis are being developed.

IAU Colloquium 164 will bring together researchers primarily interested in the astronomical use of VLBI. The meeting will provide a forum for the discussion of research results from VLBI, and for the formation of new technical and scientific ideas that will shape future developments in VLBI. About two-thirds of the meeting will be devoted to the discussion of recent astronomical results, while about one-third will focus on software and hardware

developments. There will be invited review papers, contributed papers, and posters. Specialized sessions also may be arranged, subject to demand (e.g., discussions of specific software or hardware issues). The NRAO will host this meeting, to be held in Socorro, 21-26 April 1997, at Macey Center adjacent to the NRAO's Array Operations Center.

The first mailing for the meeting was distributed electronically to the NRAO's VLBI exploder. The full text of this mailing, including the preliminary registration form, can be requested by e-mail to iau164@nrao.edu or can be accessed on the WWW by selecting "Meetings" from the NRAO home page (<http://www.nrao.edu/>). If you are interested in attending IAU Colloquium 164, please complete a preliminary registration form and return it by the deadline and means indicated in the form. A copy of this form also is provided below, for your convenience.

J.A. Zensus, Chair, Scientific Organizing Committee
J.M. Wrobel, Chair, Local Organizing Committee

IAU COLLOQUIUM 164

Radio Emission from Galactic and Extragalactic Compact Sources
Socorro, New Mexico, USA, 21-26 April 1997

PRELIMINARY REGISTRATION

Last Name: _____ I would like to give a paper with the following preliminary title:

First Name(s): _____ I would prefer to give an oral contribution.

Affiliation : _____ I would prefer to give a poster contribution.

Telephone: _____ Fax: _____

Electronic Mail Address: _____

Paper Mail Address: _____

Comments: _____

Please indicate your preferences by changing ___ to x below:

- I definitely plan to attend the meeting.
- I am interested in the meeting, but I do not know if I will be able to attend. Please send me the second mailing anyway

Please complete this form and return it by 1 August 1996, via either electronic mail (preferred) to: iau164@nrao.edu, or by fax to: Ms. Terry Romero at +1-505-835-7027 (voice: +1-505-835-7000), or by mail to: IAU Colloquium 164, c/o Ms. Terry Romero, NRAO, P. O. Box O, Socorro, NM 87801, USA.

ADASS '96**SIXTH ANNUAL CONFERENCE ON ASTRONOMICAL DATA ANALYSIS SOFTWARE AND SYSTEMS**

The Sixth Annual Conference on Astronomical Data Analysis Software and Systems (ADASS) will be held 22-25 September 1996 in Charlottesville, Virginia, at the Omni Charlottesville Hotel. The conference, hosted this year by the NRAO, is an international conference which provides a forum for scientists and programmers concerned with algorithms, software, and software systems employed in the reduction and analysis of astronomical data. The five previous ADASS meetings (1991–Tucson; 1992–Boston; 1993–Victoria, B.C.; 1994–Baltimore; and 1995–Tucson) have established this series of conferences as the leading world forum for scientists and programmers to discuss issues of common interest regarding algorithms and software systems for the acquisition, reduction, analysis, archiving, and retrieval of astronomical data.

The Program Organizing Committee for ADASS '96 has the following members: Rudi Albrecht (ST-ECF/ESO), Roger Brissenden (SAO), Tim Cornwell (NRAO), Dennis Crabtree (DAO/CADC), Bob Hanisch - Chair (ST ScI), Gareth Hunt (NRAO), George Jacoby (NOAO), Barry Madore (IPAC), Jonathan McDowell (SAO), Jan Noordam (NFRA), Dick Shaw (ST ScI), Karen Strom (U. Mass), and Doug Tody (NOAO). The Local Organizing Committee is chaired by Richard Simon (NRAO), and has participants from NRAO, the University of Virginia Department of Astronomy, and the University of Virginia Computer Science Department.

The Conference has established a home page on the WWW at <http://www.cv.nrao.edu/adass/>. The preliminary program for the Conference is now available. For those with access to the WWW, see <http://www.cv.nrao.edu/adass/prelim.html>. Otherwise please contact adass96@nrao.edu if you would like a copy. As the dates for ADASS approach, the latest information will be available on-line.

The invited speakers for ADASS '96 currently include:

Dr. Tim Cornwell (NRAO) - "*Design and Implementation of Radio-Astronomical Calibration and Imaging in AIPS++*"

Dr. Gary Ferland (U. Kentucky) - "*Cloudy: Modeling the Emission From Astrophysical Nebulae*"

Mr. Harry Foxwell (Sun Microsystems, Inc.) - "*Java Futures and Implications*"

Dr. Keith Home (U. St. Andrews) - "*Astrotomography*"

Dr. Harvey Liszt (NRAO) - "*A Home-Grown but Widely Distributed Data Analysis System*"

Dr. Michael Rosa (ST-ECF) - "*Physical Modeling of Scientific Instruments*"

Dr. Martin Shepherd (Caltech) - "*DIFMAP: An Interactive Program for Synthesis Imaging*"

Dr. Martin Weinberg (U. Mass) - "*Modeling Galaxies*" (tentative)

For further information and to be placed on the mailing list for the conference, please send a request to:

adass96@nrao.edu

or

ADASS '96
C. White
National Radio Astronomy Observatory
520 Edgemont Rd.
Charlottesville, VA 22903, USA

Mark your calendar now and plan to attend ADASS '96! The deadline for abstracts and early registration is officially 15 July, but if you mention this article the deadline for abstracts and early registration will be extended to July 31. What a deal!

R. S. Simon

AAS ROSSI PRIZE RECOGNIZES WORK MADE AT THE VLA

Felix Mirabel (Saclay, France) and Luis F Rodriguez (UNAM, Mexico) will be the recipients of the 1996 Bruno Rossi Prize in recognition of their work at the VLA that led to the discovery of the first galactic superluminal source, GRS1915+105. This Prize is awarded annually, since 1985, by the High Energy Astrophysics

Division of the American Astronomical Society for a significant contribution to High Energy Astrophysics, with particular emphasis on recent, original work.

P. A. Vanden Bout



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