The NRAO announces the Call for Proposals for the 1 October deadline. The call is open now and will close on 1 October 2010 at 17:00 EDT (21 UTC).

Proposal preparation and submission are via the NRAO Proposal Submission Tool (PST) available through the NRAO Interactive Services (http://my.nrao.edu/). Several modifications to the PST have been made and will be in place starting 12:00 EDT (16 UTC) Friday, 17 September 2010. (See PST Release Notes Oct 2010 (https://safe.nrao.edu/wiki/bin/view/Software/PSTReleaseNotesOct2010) for details of recent changes.) The principal investigator, the contact author and any students who will use the proposed observations for their dissertation thesis must be registered users. On the registration form you will be asked for contact information which will be used for notification about proposal status, telescope scheduling, funding, etc. We encourage proposers to register early.

**General News for Observers**

**ALMA Preparatory Science Programs on NRAO Telescopes**

With ALMA early science operations slated to begin in 2011, it is time to consider what preparatory NRAO observations may be needed to optimize the ALMA science return. To that end, we are encouraging the community to propose for ALMA Preparatory Science observing programs on the Green Bank Telescope (GBT), the Very Long Baseline Array (VLBA) and the Expanded Very Large Array (EVLA).

Proposals will be received for all NRAO telescopes, and for both Large (http://www.nrao.edu/administration/directors_office/largeprop.shtml) and Regular proposals. There will be no limits on the fraction of time that NRAO will allocate for these proposals. Such proposals should be identified as ALMA preparatory science in the proposal title or in the abstract. As usual, these proposals will be subject to normal referee review process.

For US investigators, we call attention to a recent announcement of the National Science Foundation (NSF) Division of Astronomical Sciences (AST) which encourages submission of proposals related to ALMA preparatory science to NSF's solicitation NSF-05-608. See ALMA-Related funding proposals (/about/news_20100909.shtml) (NSF 05-608 (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf05608)).

**PhD Dissertations using NRAO Facilities**

Students planning to use an NRAO telescope for their PhD dissertation (particularly if more than one proposal will be required) must submit a "Plan of Dissertation Research" of no more than 1000 words with their first proposal. This plan can be referred to in later proposals. At a minimum it should contain a thesis time line and an estimate of the level of NRAO telescope resources needed. The plan provides some assurance against a dissertation being impaired by adverse referee comments on one proposal when the referees do not see the full scope of the project. The plan can be submitted via NRAO Interactive Services (http://my.nrao.edu/). Proposers are reminded to prepare the plan comfortably in advance of the proposal deadline. This requirement applies to all three of the major NRAO instruments: EVLA, VLBA and GBT.

**Student Observing Support Program**

NRAO maintains a program to support research by students, both graduate and undergraduate, at U.S. universities and colleges. This program is intended to strengthen the proactive role of the Observatory in
training new generations of telescope users. Regular proposals submitted for the GBT, VLBA, and the EVLA are eligible. Large proposals for the VLBA, GBT, EVLA, and any combination of these telescopes are also eligible. New applications to the program may be submitted along with new observing proposals at any proposal deadline. These links provide details (http://science.nrao.edu/opportunities/sos.shtml) and a general overview (http://science.nrao.edu/opportunities/studentsupportintro.shtml) of the program.

The End of the Trimester-Based Proposal Cycle

Note that this is the last trimester-based proposal cycle; subsequent proposals will be submitted according to a semester schedule beginning February 1, 2011. See the article in the NRAO eNews issue of September 1, 2010 (http://science.nrao.edu/enews/3.8/index.shtml#proposals) for a description.

Key Science Projects

Proposals for time on the VLBA, the GBT and the EVLA are being considered for designation as "Key Science Projects." Key Science Projects should be those that have high science impact, addressing fundamental and forefront issues in astronomy and astrophysics. Key Science Project status will be based on scientific rank, recommendation by the NRAO Proposal Selection Committee (PSC), and approval by the NRAO Director. For further details please see the Key Science Project (http://science.nrao.edu/science/keysciproj.shtml) policy web page.

GBT Proposals

The 1 October 2010 deadline is for the Trimester 2011A observing period: 1 February 2011 through 31 May 2011. Proposals will be considered for the following receivers: 290-920 MHz (PF1), 910-1230 MHz (PF2), 1.15-1.73 GHz (L), 1.73-2.60 GHz (S), 3.8-6.1 GHz (C), 8.0-12.0 GHz (X), 12.0-15.4 GHz (Ku), 18.0-26.5 GHz (K), 18.0-26.0 (KFPA), 26.0-39.5 GHz (Ka), 38.2-49.8 GHz (Q) receivers and MUSTANG (80-100 GHz Bolometer Array).

Available observing modes include spectral line (including cross-polarization), continuum, pulsar, and VLBI/VLBA. The VLBA back end with Mark5A disk recorder may be used as a high-time resolution (> 2 ns) backend for single-dish observing.

We will consider GUPPI proposals using the coherent and incoherent dedispersion modes in the 2011A trimester. For more information on the incoherent dedispersion modes see the GUPPI eNews article from March 2010 (http://science.nrao.edu/enews/enews_3_2/enews_3_2.shtml#guppi).


The K-band Focal Plane Array (KFPA) receiver will be available as a general use receiver beginning with the 2011A trimester. More information on the KFPA can be found at https://safe.nrao.edu/wiki/bin/view/Kbandfpa/2011Call (https://safe.nrao.edu/wiki/bin/view/Kbandfpa/2011Call).

The Mustang receiver may be upgraded to a 100 pixel, more sensitive array during the 2011A trimester. Shared risk proposals will be considered for the upgraded Mustang array. For more information see http://www.gb.nrao.edu/mustang/#mus100 (http://www.gb.nrao.edu/mustang/#mus100)

The Ka receiver was redesigned to use 90 degree hybrids (rather than 180 degree hybrids) during the summer of 2010. The receiver will be commissioned in late September 2010. We expect slightly improved
performance for the CCB due to more bandwidth becoming available. Spectrometer performance is not expected to change. We do expect improvement in performance with the Zpectrometer. For the most current information please see [http://www.gb.nrao.edu/gbtprops/gbtpropnews/Kaband11A.shtml](http://www.gb.nrao.edu/gbtprops/gbtpropnews/Kaband11A.shtml).

Proposals requesting GBT participation in High Sensitivity Array (HSA), Very Long Baseline Array (VLBA), or global Very Long Baseline Interferometry (VLBI) observations should be submitted to the VLBA only, and not to the GBT. Proposers requesting joint GBT and Expanded Very Large Array (EVLA) and/or VLBA observations must submit separate proposals for each instrument and indicate in these proposals that they are a joint request.

The GBT will be scheduled by the Dynamic Scheduling System (DSS [http://www.gb.nrao.edu/DSS](http://www.gb.nrao.edu/DSS)) in Trimester 2011A. Note that the DSS will result in no change to the proposal preparation and submission process: when the refereeing process is complete, project investigators will be contacted on how to modify any information brought over from the PST which they desire to have changed before the trimester begins. GBT staff will, as always, be available to help observers in working with the observing information in the DSS database and also with understanding the new dynamic scheduling scheme. Note that the DSS alters only the scheduling process for the GBT and will not affect the observing interface (e.g. Astrid) in any way. The GBT observing policies ([https://safe.nrao.edu/wiki/bin/view/GB/Observing/GbtObservingPolicies](https://safe.nrao.edu/wiki/bin/view/GB/Observing/GbtObservingPolicies)) describe the remote observing restrictions.

Technical questions or questions about the proposal process may be addressed to Toney Minter (+1-304-456-2275 or tminter@nrao.edu). Questions about the PST should be sent to the NRAO helpdesk ([http://help.nrao.edu/](http://help.nrao.edu/)).

## EVLA Proposals

### Observing Capabilities for EVLA Early Science

The 1 October deadline is for proposals to use the EVLA in the move from the BnA to A configurations (May 16 – 27, 2011) and the A configuration (May 27 – August 29, 2011). Proposals for future configurations will also be considered. Performance tests of the VLA's 74 MHz dipoles with the EVLA electronics will take place during September 2010, and it is expected that NRAO will mount the 74 MHz dipoles for a low frequency observing campaign beginning the last two weeks of B-configuration, through BnA and into the beginning of the A-configuration. Proposals to use the 74 MHz system in B, BnA, or A configurations will also be considered at the 1 October deadline.

The conversion of VLA antennas to EVLA antennas is complete. EVLA Early Science is being enabled by two programs for the user community: the Open Shared Risk Observing (OSRO) ([http://science.nrao.edu/evla/earlyscience/osro.shtml](http://science.nrao.edu/evla/earlyscience/osro.shtml)) program and the Resident Shared Risk Observing (RSRO) ([http://science.nrao.edu/evla/earlyscience/rsro.shtml](http://science.nrao.edu/evla/earlyscience/rsro.shtml)) program. These programs have been announced previously in NRAO eNews ([http://www.nrao.edu/news/newsletters/enews/enews_2_8/enews_2_8.shtml#evla](http://www.nrao.edu/news/newsletters/enews/enews_2_8/enews_2_8.shtml#evla)). Correlator capabilities expected to be available through these programs are described at the OSRO and RSRO web pages; OSRO capabilities are also detailed in the EVLA Observational Status Summary ([http://evlaguides.nrao.edu/index.php?title=Category:Status](http://evlaguides.nrao.edu/index.php?title=Category:Status)). We remind users that access to the EVLA is on a shared-risk basis, and that the EVLA is undergoing commissioning through 2012. Nevertheless, NRAO will make every effort to ensure the EVLA data quality in this period.

For this proposal cycle, we will be offering the extended EVLA tuning ranges at L, S, C, K, Ka, and Q-bands. Some L-band systems are "interim," which means they use old VLA polarizers; the ranges outside the nominal VLA frequencies for L-band have poor sensitivity and polarization performance for the interim
receivers, as compared with the nominal VLA frequencies. Further details of the sensitivity as a function of frequency is available in the new **EVLA Observational Status Summary** ([http://evlaguides.nrao.edu/index.php?title=Category:Status](http://evlaguides.nrao.edu/index.php?title=Category:Status)).

The numbers of receiver systems available at the beginning of the EVLA A-configuration are expected to be approximately as follows:

<table>
<thead>
<tr>
<th>Band</th>
<th>Tuning range</th>
<th>Receiver availability: May 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>1-2 GHz</td>
<td>16 (EVLA) + 11 (interim)</td>
</tr>
<tr>
<td>S</td>
<td>2-4 GHz</td>
<td>16</td>
</tr>
<tr>
<td>C</td>
<td>4-8 GHz</td>
<td>27</td>
</tr>
<tr>
<td>X</td>
<td>8.0-8.8 GHz</td>
<td>7 (EVLA) + 22 (VLA)</td>
</tr>
<tr>
<td>K</td>
<td>18-26.5 GHz</td>
<td>27</td>
</tr>
<tr>
<td>Ka</td>
<td>26.5-40 GHz</td>
<td>27</td>
</tr>
<tr>
<td>Q</td>
<td>40-50 GHz</td>
<td>27</td>
</tr>
</tbody>
</table>

New EVLA-style X-band receivers will be included in astronomical observations along with the existing narrow-band VLA receivers as soon as they have been tested. However, observers should continue to assume the tuning range of the VLA receivers at X-band for this proposal cycle.

For those EVLA antennas whose receivers support the wide bandwidths it is now possible to separate the two IF pairs by up to 10 GHz. There are some limitations on the tuning of the IFs for the Ka-band receiver. Please consult the **EVLA Observational Status Summary** ([http://evlaguides.nrao.edu/index.php?title=Category:Status](http://evlaguides.nrao.edu/index.php?title=Category:Status)) for details.

Proposals to use the EVLA Ku-band receivers will not be considered at the 1 October 2010 proposal deadline, however there will either be a special call for proposals to use the Ku-band system or they will be made available at the next proposal cycle. This is the first proposal cycle to offer 74 MHz capability with the EVLA. Resolution and sensitivity are posted in the **EVLA Observational Status Summary** ([http://evlaguides.nrao.edu/index.php?title=Category:Status](http://evlaguides.nrao.edu/index.php?title=Category:Status)), based on the VLA capabilities; the sensitivity may be better than posted due to the improved correlator (WIDAR) and the increase in usable bandwidth due to the improved interference environment.

Subarrays and VLBI observing modes are not currently available with the EVLA correlator. Users will be notified when these observing modes have been commissioned.

All EVLA observations are set up using the new **Observation Preparation Tool (OPT)** ([http://science.nrao.edu/evla/observing/opt.shtml](http://science.nrao.edu/evla/observing/opt.shtml)). Use of the OPT requires registration in the NRAO User Database. Most, if not all, projects will be observed dynamically with a 0.5 hour granularity, so users should submit scheduling blocks early in the configuration to maximize the opportunity of being observed.

Proposal preparation and submission are via the Proposal Submission Tool at **NRAO Interactive Services** ([http://my.nrao.edu/](http://my.nrao.edu/)). The different capabilities available for the OSRO and RSRO programs may be selected in the "resources" section of VLA proposals.

**EVLA Impact and Availability**

- **Short term: December 2010 - May 2011**
  The wide-band Q-, Ka-, K-, and C-band receiver systems are expected to be completed. Approximately half of the S- and L-band receiver systems should also be available by May 2011.
• **Medium Term: 2011**
  New capabilities will continue to be commissioned throughout 2011, with the goal of being able to offer up to 2 GHz bandwidth for the D-configuration in late 2011.

• **Long Term: 2012**
  The fast samplers will be commissioned throughout 2011 and 2012, and access to wide bandwidths for general use is expected in 2012. The remaining receiver bands will be completed by Q4, 2012.

### Updated EVLA Observational Status Summary

An updated [EVLA Observational Status Summary](http://evlaguides.nrao.edu/index.php?title=Category:Status) is available that summarizes the OSRO capabilities and expected sensitivities of the EVLA for the 1 October proposal deadline.

### VLBA, HSA, & VLBI Proposals

**Proposal deadline is 2010 October 1 for trimester 2011A**

This deadline applies to regular observing proposals requesting the:

- **Very Long Baseline Array (VLBA)**, alone or with affiliate(s)
  - [VLBA details](http://science.nrao.edu/vlba/)
  - [Proposal submission](http://my.nrao.edu/) must use the Proposal Submission Tool at NRAO Interactive Services

- **High Sensitivity Array (HSA)**
  - [HSA details](http://www.nrao.edu/HSA/)
  - [Proposal submission](http://my.nrao.edu/) must use the Proposal Submission Tool at NRAO Interactive Services

- **European VLBI Network (EVN)**
  - [EVN details](http://www.evlbi.org/)
  - [Proposal submission](http://proposal.jive.nl/) via your "NorthStar" account or create one

- **Global cm VLBI (EVN+VLBA)** in the 2011 session(s)
  - [EVN details](http://www.evlbi.org/)
  - [VLBA details](http://science.nrao.edu/vlba/)
  - [Proposal submission](http://proposal.jive.nl/) (use your "NorthStar" account or create one)

- **Global mm VLBI** (using the VLBA) in the 2011 session(s)
  - [Proposal submission](http://www.nrao.edu/admin/do/vlba-gvlbi.shtml) instructions

This deadline also applies to [large observing proposals](http://www.nrao.edu/administration/directors_office/largeprop.shtml) requesting the VLBA, alone or with other NRAO resources.

The observing period is mid-January 2011 through mid-May 2011.

### Projects with Less Demanding Scheduling Requirements

Dynamic scheduling is used for most VLBA-only projects. Dynamic scheduling greatly enhances the proportion of projects that are observed under conditions allowing their scientific goals to be met. In many cases, this requires that nearly all stations be available, with good weather conditions. Much of the time, however, these criteria do not prevail. To allow effective utilization of such time, and to help fill short gaps between projects, we encourage users to consider submitting proposals that have one or more of the following properties:

- The project can be broken into multiple scheduling blocks of 1 to 4 hours that are easy to insert into
scheduling gaps. Indeed, over-subscribing the dynamic scheduling queue with many such blocks maximizes the flexibility of the scheduler. This may be attractive for weak source detections and astrometry by allowing most of the observing time to be accumulated at high elevation. It may not be as useful for imaging because of source variability.

- The project can be observed in bad weather. This would apply to most observations at frequencies below 10 GHz.
- The project can be observed when only 6-8 stations are available. Good weather conditions typically prevail at 9 or 10 widely dispersed locations only a fairly small fraction of the time. However, it is uncommon for fewer than 7 stations to have good weather. Projects that could use time where more than one station is unavailable due to weather or maintenance have an advantage in being scheduled. Such projects include those that do not need full UV coverage, or that accumulate integration time in multiple sessions.

Projects conforming to one or more of the above criteria are more likely to be scheduled, and also help to optimize the overall use of the VLBA.

**VLBA capabilities**

- **Increased data rate**

A recorded bit rate of 512 Mbps is the current standard for continuum observations. Since this is the maximum rate allowed by the existing hardware, there are currently no requirements to justify specific bandwidths in the proposal.

We plan on being able to offer a 2 Gbps data rate early in 2011. Further information will be provided in a subsequent, special Call for Proposals when this capability becomes available.

- **DiFX software correlator system**

Some of the capabilities of DiFX, and other considerations for its use, are listed below. Detailed information is available in Section 7 of the [VLBA Observational Status Summary](http://www.vlba.nrao.edu/astro/obstatus/current/)

- Spectral resolution as high as 4096 points per baseband channel, for any polarization configuration.
- Very short integration periods, in principle as short as twice the reciprocal frequency resolution.
- A sophisticated pulsar gate that allows binning.
- Output data rates as high as 10 Mbyte per second of observing time. Higher rates are possible, when justified in the proposal. Users requesting the new multiple-phase-center capability, described below, should consider its impact on the output data rate in correlation of their observations.
- Processing of any mix of VLBA, Mark4 and Mark5B formatted data.
- Processing of one-bit samples. This capability is used primarily to match bandwidths with non-VLBA systems recording 1 Gbps, but does impose an additional processing load, and must be justified in the proposal.
- Correlation at multiple phase centers in a single processing pass.
- Selection of spectral subsets of the observed bands.

The last two features require additional correlator resources, and the observing time scheduled in these modes may be limited to prevent over-subscription. To facilitate resource evaluation, proposals requesting these features should include details of how they will be used.
The VLBI scheduling program SCHED will continue to be updated in 2010 and 2011 to support new features of the VLBA sensitivity upgrade, and similar developments within the EVN. These features, including new digital backends and recording systems, and new capabilities of the DiFX correlator, will bring additional flexibilities, as well as constraints, to the way observations are configured. The changes to SCHED make it especially important that the latest version be used in producing observing schedules. Information on new SCHED releases and related configuration issues are announced on the VLBI e-mail exploder.

**Toward VLBI at the EVLA**

Although the EVLA is not currently available for VLBI observations, significant progress has been achieved toward producing a phased-array output with the capabilities built into the WIDAR correlator. Future availability of the EVLA for VLBI use will be announced at an appropriate time.

**EVPA Monitoring at the EVLA**

After the VLA was switched off in January 2010, the regular POLCAL observing program was halted to focus on EVLA commissioning. Starting in May 2010, we resumed POLCAL observing in a limited fashion under the TPOL0003 project name. You can find data from this project using the standard Data Archive tool (https://archive.nrao.edu/archive/archiveproject.jsp).

Note that at first these will only be run occasionally, on a monthly schedule at best. If you have VLBA observations that need a particular POLCAL observation, please contact us at the NRAO Helpdesk (http://help.nrao.edu) to see if we can schedule an appropriate TPOL0003 run.

WARNING: We will not be automatically processing and posting the POLCAL results (as we used to with the VLA) for the foreseeable future. You will need to download and process the TPOL0003 EVLA data for yourselves. We apologize for this inconvenience but all our resources are focused on EVLA commissioning at this time.

Note that we have two "standard" TPOL0003 schedules that we would like to run regularly:

- POLCAL_1: J0555+3948, J0713+4349, J0854+2006, J0927+3902, J1310+3220 and J1331+3030 as primary.
- POLCAL_2: J2136+0041, J2202+4216, J2253+1608, J0319+4130, J0359+5057 and J0137+3309 as primary.

If at all possible, use these calibrators so we do not have to modify the schedules.

**VLBA Observational Status Summary**


**VLBA/HSA Contacts and the NRAO Helpdesk**

Beginning immediately, we will no longer assign local technical contacts to approved VLBA/HSA proposals. Investigators requiring assistance in proposal submission, observation preparation, or data processing should instead use the NRAO Helpdesk (http://help.nrao.edu).
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