



VLA/VLBA Proposal and Observation Preparation

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VLA/VLBA Proposals & Observations

Two aims & One place where to do both: <https://my.nrao.edu>

Regular VLA/VLBA Proposal Calls are 2x each year: 1st Feb & 1st Aug

Ad-hoc **DDT proposals** (Director Discretionary Time) can be submitted at any time (but need good reason why can't wait for regular call)

Upcoming 2024A semester:

- deadline around 1st Aug
- VLBA observing: 1 Feb - 1 Aug 2024
- VLA observing dependent on configuration changes;
in 2024A: B, C configurations & observing 25 Jan - 16 Sep 2024

VLA/VLBA Proposals & Observations

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- VLBA observing: 1 Feb - 1 Aug
- VLA observing dependent on VLBA observing
in 2024A: B, C configurations

Semester	Observing Period	Configuration	Proposal Deadline
2025A	2025 May 29 - 2025 Aug 25*	C	2024 Jul 31
2025A	2025 Feb 21 - 2025 May 19*	D	2024 Jul 31
2024B	2024 Oct 18 - 2025 Feb 03*	A	2024 Jan 31
--	2024 Sep 20 - 2024 Oct 07*	BnA [†]	--
2024A	2024 May 08 - 2024 Sep 16*	B	2023 Aug 02
2024A	2024 Jan 25 - 2024 Apr 22*	C	2023 Aug 02
2023B	2023 Oct 20 - 2024 Jan 15*	D	2023 Feb 01
2023A	2023 Jun 30 - 2023 Oct 02*	A	2022 Aug 01
--	2023 Jun 02 - 2023 Jun 19*	BnA [†]	--

Needed: my.nrao.edu account



Login

Username:

Password:

Register for an Account

Accounts are used by astronomers to create and submit proposals, prepare for observations, and gain access to proprietary data from the archive.

[Lost your Username or Password?](#) You can reset it [online](#).

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Needed: my.nrao.edu account

Provides access to various services:

- Proposal preparation
 - creating and submitting new proposals
 - access to all proposals you are associated with regardless of your role (PI, co-I, contact author, reviewer)
- Data Processing on NM computing cluster
- VLA Observation Preparation Tool (OPT)
- VLA, VLBA, GBT data archive

VLA/VLBA Proposal Submission Tool



National Radio Astronomy Observatory

Dashboard

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Obs Prep

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Hi, Anna D. | [Sign Out](#)

Monday 03 April 2023

Help

Options

- Dashboard
 - News & General Information
 - Information for Astronomers
 - Documentation
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 - My Information
 - My Data

DASHBOARD

Web Browser

We recommend using the Firefox web browser for the Proposal Submission Tool (PST).

User Accounts

Please remember to update your user profile, especially if you have moved to a new institution.

Do not create a new account.

Proposal Confidentiality:

For successful proposals, the name of the Principal Investigator, proposal ID, title, hours awarded and proposal type (regular, triggered, Directors Discretionary Time...), as well as the list of Co-Investigators and the Abstract, are made public. Additional proposal metadata (such as source positions, observation frequencies, and integration times) are available publicly from the NRAO archive once data for a proposal has been collected.

[Proposal Finder Tool](#) - Search cover sheets of approved NRAO telescope proposals.

[Archive Access Tool](#) - Search for and access the data of observed projects.

Telescope News

Next Proposal Deadline: August 01, 2023 5 PM EDT (21 hours UT) in 120 days

Important All proposal authors must be registered users

Important [Information for VLA/GBT/VLBA/HSA/VLBI Proposers](#)

[VLA Configuration Plans and Proposal Deadlines](#)

[Proposal Help Desk](#)



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VLA/VLBA Proposal Submission Tool



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My Proposals

Available Authors

Available Organizations

New Proposal

Help

Search

Problem finding your proposal? Try sorting a column by clicking on the column header or by changing the filters to the left.

« ‹ Records: 15 Page: 1 of 1 › »

VLA/VLBA Proposal Submission Tool



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New Proposal Help

Search

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Records: 15 Page: 1 of 1

- My Proposals
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Create Help



VLA



GBT



VLBA/HSA



GMVA

Intermission: Joint Proposals

VLBI proposals submitted via NRAO:

- pure VLBA
- VLBA+VLA
- HSA if each telescope used for VLBI only (otherwise separate proposals)
- GMVA

EVN proposals submitted via European system

<https://www.evlbi.org/call-proposals>

Joint Proposals

• radio

- Joint between VLA, GBT and VLBA require separate proposals for each (with the same scientific justification), except as elements of HSA.
- Joint Proposals with ALMA → single proposal only.

• multi-wavelength

- Joint proposals with HST, Chandra, XMM-Newton, Swift, Fermi
- Each has own Memorandum with NRAO:

<https://science.nrao.edu/observing/call-for-proposals/2023b/joint-proposals>

- can request time with either telescope in joint proposals

VLA/VLBA Proposal Submission Tool



Dashboard **Proposals** Reviews Data Processing Obs Prep Helpdesk Profile

My Proposals Available Authors Available Organizations

New Proposal Help

Search

Problem finding your proposal? Try sorting a column by clicking on the column header or by changing the filters to the left.

« < Records: 15 Page: 1 of 1 > »

My Proposals Available Authors Available Organizations

Create Help



VLA



GBT



VLBA/HSA




GMVA

VLA/VLBA Proposal Submission Tool

Options

- My Proposals
 - VLA/2023-03-001
 - General**
 - Authors
 - Science Justification
 - Technical Justification
 - Sources
 - Resources
 - Sessions
 - Disposition Letter

GENERAL

 **Observing Proposal**

For information regarding the confidentiality - and the public release of information - of proposal details see [here](#).

Title
This is a blank proposal created on Monday April 3, 2023

Type
Regular

Sponsored Proposal
Not Sponsored

Scientific Category

Abstract

Joint
Not a Joint Proposal

Observing Type(s)

Dissertation Research Plan
Dissertation Research Plan(s) not required

Related Proposals

Here example of a regular VLA blank proposal

For detailed instructions, refer to the proposal submission guide <https://go.nrao.edu/pst-doc>

VLA Observing Capabilities

GO - General Observing

VLA

- 3-bit/8-bit samplers, and a combination of those
- subarrays
- on-the-fly mapping (OTF)
- Y27 (phased VLA) or Y1 (single VLA antenna) for VLBA
- Solar observing
- Pulsar modes

For up to date information see:

<https://science.nrao.edu/facilities/vla/docs/manuals/oss/proposing>

VLBA Observing Capabilities

GO - General Observing

VLBA

- up to 4Gbps recording rate
- S/X-band simultaneous observations
- VLBA+VLA/Y1
- multiple phase centers
- flexible frequency set up with DDC system
- flexible spectral resolution
- spectral zooming
- pulsar modes

For up to date information see:

<https://science.nrao.edu/facilities/vlba/docs/manuals/oss/offered-vlba-capabilities-during-the-next-semester>

VLA/VLBA Observing Capabilities

SRO - Shared Risk Observing (2024A)

VLA

- 3 bit subarrays
- mode changing subarrays
- high frequency OTF (on-the-fly mapping)
- RFI blanking (currently actively being worked on)
- wideband VLA in parallel with VLBA+Y27 mode
 - for proposers who want VLA data to complement their science, currently only <0.5GHz bandwidth available with VLA matching VLBA bandwidth
- eLWA (extended Long Wavelength Array, 74MHz/4-band)

VLBA

- availability of baseband copy



VLA Observing Capabilities

RSRO - Resident Shared Risk Observing (2024A)

VLA

- correlator dump times <50 ms, incl. integrations times 5 ms.
- data rates above 100 MB/s
- recirculation beyond a factor of 64 in the correlator
- 4-band polarization or spectral line
- complex phased array observations (e.g. pulsar and complex VLBI observing modes)
- frequency averaging in the correlator
- rapid response capabilities
- many others...

VLBA Observing Capabilities

RSRO - Resident Shared Risk Observing (2024A)

VLBA

- VLBA+VLA/Y3
- 3 Gbps at L-band
- real time correlation (!)
- rapid response observations
- improving troposphere model
- L/P dual-band mode (1.4GHz/350MHz)

The 2024A capabilities provided here are preliminary → formal proposal call with all offered capabilities will go live in June 2023

Always check Observational Status Summary!

VLA: <https://science.nrao.edu/facilities/vla/docs/manuals/oss>

VLBA: <https://science.nrao.edu/facilities/vlba/docs/manuals/oss>

VLA/VLBA Proposals: Science

Proposal types depending on amount of time requested:

- **Regular** (<200hr): max 4 pages science justification
- **Large** (200hr or more): max 10 pages science justification; requires data reduction and release plan

Triggered proposals: max 4 pages science justification
→ observations of transients whose event times are unknown a priori; well-defined triggering criteria are required

Proposal Finding Tool (PFT): <https://library.nrao.edu/proposals>
a database of approved and observed NRAO proposals

Notes on Technical justification

Explain reason for the array configuration requested:

Consult <https://go.nrao.edu/vla-res>: Is the offered resolution sufficient? Is the largest angular scale compatible?

Scheduling constraints: Make sure you review the listed scheduling constraints and address those. Also good to check whether observing close to the sun or other celestial bodies (e.g. <https://go.nrao.edu/suncheck>)
Also review: <https://go.nrao.edu/opt-suncheck>

Polarimetric observations requirements: In case you plan polarimetry, here you should explain your calibration strategy. Will you need good parallactic angle coverage? Did you identify a good unpolarized calibrator?

Flux density & brightness temperature sensitivities: required

Give required on-source integration time, and should connect to the proposals science goals. VLA Exposure Calculator:
<https://obs.vla.nrao.edu/ect>

Exposure Calculators: VLA

VLA Exposure Calculator	
Array Configuration	A
Number of Antennas	25
Polarization Setup	<input type="radio"/> Single <input checked="" type="radio"/> Dual
Type of Image Weighting	<input type="radio"/> Natural <input checked="" type="radio"/> Robust
Representative Frequency	0.0000 GHz
Receiver Band	Unspecified
Approximate Beam Size	Unknown
Digital Samplers	<input type="radio"/> 3 bit <input checked="" type="radio"/> 8 bit
Elevation	Zenith (90 degrees)
Average Weather	Winter
Calculation Type	<input checked="" type="radio"/> Time <input type="radio"/> BW <input type="radio"/> Noise/Tb
Time on Source (UT)	0h 0m 0s
Total Time (UT)	0h 0m 0s
Frequency Bandwidth	0.0000 GHz
Line Velocity Width	0.0000 km/s
RMS Noise (units/beam)	100.0000 μ Jy
RMS Brightness (temp)	0.0000 mK
Confusion Level	0.0Jy
<input type="button" value="Help"/> <input type="button" value="Save"/>	

<https://go.nrao.edu/ect>

Some specific notes:

→ Make sure you account for RFI when selecting the bandwidth.

→ The overhead calculation does not account for initial slew and setups for short observing blocks (!)

→ The overhead calculation assumes a 2-hour long scheduling block.

→ At very low frequencies, one needs to adjust for observing at low Galactic latitudes.

→ Note the special case for 4-band, use single polarization selection only.

Exposure Calculators: VLBA

EVN e-EVN VLBA GLOBAL GMVA	RESET GO
Observing band & data rate [Mbit/s]	On-source integration time [min]
X - 3.6cm 2048	240
<input checked="" type="checkbox"/> Ef <input type="checkbox"/> Nt <input type="checkbox"/> My <input type="checkbox"/> Pv <input type="checkbox"/> Pa <input checked="" type="checkbox"/> Hn <input type="checkbox"/> Mc <input type="checkbox"/> Sh <input type="checkbox"/> Km <input type="checkbox"/> Ro70 <input type="checkbox"/> Ho <input checked="" type="checkbox"/> NI <input type="checkbox"/> On <input type="checkbox"/> Tm65 <input type="checkbox"/> Sv <input type="checkbox"/> Ro34 <input type="checkbox"/> Cd <input checked="" type="checkbox"/> Fd <input type="checkbox"/> Tr <input type="checkbox"/> Ur <input type="checkbox"/> Zc <input type="checkbox"/> Pb <input type="checkbox"/> Ap <input checked="" type="checkbox"/> La <input type="checkbox"/> Jb1 <input type="checkbox"/> Mh <input type="checkbox"/> Bd <input type="checkbox"/> Ku <input type="checkbox"/> Go <input checked="" type="checkbox"/> Kp <input type="checkbox"/> Jb2 <input type="checkbox"/> Ys <input type="checkbox"/> Wz <input type="checkbox"/> Ky <input checked="" type="checkbox"/> Gb <input checked="" type="checkbox"/> Pt <input type="checkbox"/> Cm <input type="checkbox"/> Sr <input type="checkbox"/> Ka <input type="checkbox"/> Kt <input type="checkbox"/> Y1 <input checked="" type="checkbox"/> Ov <input type="checkbox"/> Wb <input type="checkbox"/> Ar <input type="checkbox"/> Ny <input type="checkbox"/> At <input checked="" type="checkbox"/> Y27 <input checked="" type="checkbox"/> Br <input type="checkbox"/> W1 <input type="checkbox"/> Hh <input type="checkbox"/> ALMA <input type="checkbox"/> Mp <input checked="" type="checkbox"/> Sc <input checked="" type="checkbox"/> Mk	<p>The image thermal noise is estimated to be 2.564 μJy/beam (1 sigma) using natural weighting.</p>
Number of spectral channels per subband, integration time [s], and maximum baseline length	Number of polarizations, subbands per polarizations, and bandwidth of a subband [MHz]
64 ch 2 s 12000 km (EVN+VLBA)	2 pols 8 sb 32 MHz
<p>The field of view limited by bandwidth-smearing is 8.25 arcseconds (assuming 12000.0 km for the maximum baseline).</p> <p>The field of view limited by time-smearing is 2.784 arcseconds. These values are calculated for 10% loss in the response of a point source, and they give the FoV radius from the pointing center.</p>	<p>The resulting FITS file size will be about 4.62 GBytes.</p> <p>This combination of channels and polarizations results in an aggregate bit rate of 2048 Mbps, assuming 2 bit sampling.</p>
	RESET GO

The tool gives the R.M.S. noise value for the full bandwidth.

For spectral-line observations:

- Get the value for wider bandwidth then multiply it by sqrt of number of channels.
- e.g. if noise is 2.564 μ Jy/beam for 256MHz, then for 125 kHz channels (2048 channels):

$$\sigma = 2.564 \times \sqrt{2048} = 116 \mu\text{Jy/beam}$$

<http://old.evlbi.org/cgi-bin/EVNcalc.pl>

More sophisticated calculator and observation planner is now live too:

<https://planobs.jive.eu/>

Notes on Technical justification

Sources, Resources & Sessions

Sources: list all your targets, no need to enter calibrators

Resources: telescope set up (frequency, configuration, data rates, etc)

Sessions: always tricky for new users!

Notes on Technical justification

Sources, Resources & Sessions

Sessions: always tricky for new users!

→ After you specify your targets and observing setups (resources), you need to define sessions. **Sessions are not observing blocks!**

SESSIONS

Important advice on information for creating VLA Sessions can be found [here](#).

Session	Number of Sessions	Separation	Min. Start LST	Max. End LST	Min. Elevation	
<input type="checkbox"/> Session1	2 X 3.0	30 day	21:53:55	10:43:02	15	
Scheduling Constraints:			Comments:			
Source Groups			Resources		Time/Session (hrs)	Add
GroupA - LST4			C		1.50	
GroupA - LST4			X		1.50	
<input type="checkbox"/> Session2	1 X 2.0	0 day	10:06:45	23:19:12	15	

For best determination of scheduling priority by the Time Allocation Committee (**TAC**):

- Put each target source in a separate session or group by LST
- Keep multiple bands together in a given session, unless they are of value alone.
- Carefully consider minimum elevation and optimize LST request to pressure.

Proposing for Spectral Lines

<https://go.nrao.edu/gost>

For spectral line observation setups you will need to use the General Observing Setup Tool (GOST) and upload your screenshot to your proposal in PST.

The screenshot shows the GOST (v1.0) interface. At the top, it says "Subbands View Help" and "This configuration is Standard (with Justification) Why?". The Receiver Band is set to "Ku (12-18 GHz)". The Center Freq (GHz) is 15.5 for A0/C0 and 14.5 for B0/D0. The Basebands are set to 8-bit. The Dump Time (s) is 3.0. The Total Data Rate [limits] is 31.3MB/s, 112.6GB/h. Channels x Polarization Products Used is 15872 of 16384. Baseline Board Pairs Used is 62 of 64.

8-bit Baseband A0/C0

SB	Velo Cov	BW	Prod	Recirc	BIBP	Ch Wd (v)	Ch Wd (f)	Chann...	MB/s
0	620 km/s	32.0MHz	Dual	4	2	604 m/s	31.3 kHz	1,024	2.0
1	620 km/s	32.0MHz	Dual	4	2	604 m/s	31.3 kHz	1,024	2.0
2	620 km/s	32.0MHz	Dual	4	2	604 m/s	31.3 kHz	1,024	2.0
3	620 km/s	32.0MHz	Dual	4	2	604 m/s	31.3 kHz	1,024	2.0
4	620 km/s	32.0MHz	Dual	4	2	604 m/s	31.3 kHz	1,024	2.0
5	620 km/s	32.0MHz	Dual	4	2	604 m/s	31.3 kHz	1,024	2.0
6	2500 km/s	128.0MHz	Dual	1	10	1.93 km/s	100 kHz	1,280	2.4
7	2500 km/s	128.0MHz	Dual	1	10	1.93 km/s	100 kHz	1,280	2.4
8									

8-bit Baseband B0/D0

SB	Velo Cov	BW	Prod	Recirc	BIBP	Ch Wd (v)	Ch Wd (f)	Chann...	MB/s
0	660 km/s	32.0MHz	Dual	4	2	646 m/s	31.3 kHz	1,024	2.0
1	660 km/s	32.0MHz	Dual	4	2	646 m/s	31.3 kHz	1,024	2.0
2	660 km/s	32.0MHz	Dual	4	2	646 m/s	31.3 kHz	1,024	2.0
3	660 km/s	32.0MHz	Dual	4	2	646 m/s	31.3 kHz	1,024	2.0
4	660 km/s	32.0MHz	Dual	4	2	646 m/s	31.3 kHz	1,024	2.0
5	2600 km/s	128.0MHz	Dual	1	10	2.07 km/s	100 kHz	1,280	2.4
6	2600 km/s	128.0MHz	Dual	1	10	2.07 km/s	100 kHz	1,280	2.4
7									

Save

Please review the documentation and known issues. If you encounter issues, please consult with the science helpdesk, and contact the helpdesk as early as you can, especially for complex setups.

Briefly on Observation Preparation

VLA: Observation Preparation Tool (OPT)

Back to <https://my.nrao.edu/>



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Options

- Obs Prep Tools
- ▢ Information

Observation Preparation Tools

VLA Observation Preparation

- Information about Observation Preparation
- Login to the Observation Preparation Tool (OPT) ←

GBT Dynamic Scheduling System

- Information about the Dynamic Scheduling System
- Login to the Dynamic Scheduling System

Briefly on Observation Preparation

VLA: Observation Preparation Tool (OPT)

PROGRAM BLOCK DETAILS

NAME: [New Program Block] SCHEDULING PRIORITY: []

ALLOCATED TIME (HRS): 0.00 USED TIME (HRS): 0.00 COMPLETED? Yes

ACCEPTABLE CONFIGURATIONS

Drag configurations from the list on the right to the left to choose that configuration.
Drag configurations on the left up and down in order to adjust their priority.
Drag configurations from the list on the left to the right to remove that configuration.

ACCEPTABLE CONFIGURATIONS

- Any

AVAILABLE CONFIGURATIONS

- D
- D=>C
- C
- C=>B
- B
- B=>BNA
- BNA
- BNA=>A
- B=>A
- A
- A=>D

SCHEDULING BLOCKS

Index	Name	Id#	Status	Executions	Total Time	Per Execution	Scheduled Start	Wind	Api
1	[New Scheduling Block]	41788318	NOT_SUBMITTED	done 0 of 1	00:35:00	00:35:00	00:00-23:45 LST	100.0m/s	175.0deg

EXECUTION BLOCKS

SB ID	EB ID	Status	Duration	Started	Finished	Initial API (*)	Initial Wind (m/s)	Script + VCI
-------	-------	--------	----------	---------	----------	-----------------	--------------------	--------------

Briefly on Observation Preparation

VLA: Observation Preparation Tool (OPT)

File Edit View Help

NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations

Preparation | Sources | Instrument Configurations

local Mountain Time for 5 minutes of maintenance. Please log out before that time and log in again a few minutes later to continue where you left off. Currently the RCT wor

FluxCalsD » FluxCal-S1

Total Bl. BPs Used:	16 of 64
Total Data Rate:	11.85 MB/s or 42.64 GB/h
Total Spectral Points:	1024
Total Bandwidth:	2.048GHz
Capability Mode:	General observing

Basics | Lines | Basebands | Line Placement | Subbands | Special Modes | Validation

ID
4255875

Name
FluxCal-S1

Receiver Band
S (2.0GHz - 4.0GHz)

3-dB range: 1.85GHz - 4.15GHz

Correlator Integration Time (s)
1.0

Comments

Allows you to set up your own frequency tuning

Necessary for spectral line observing!

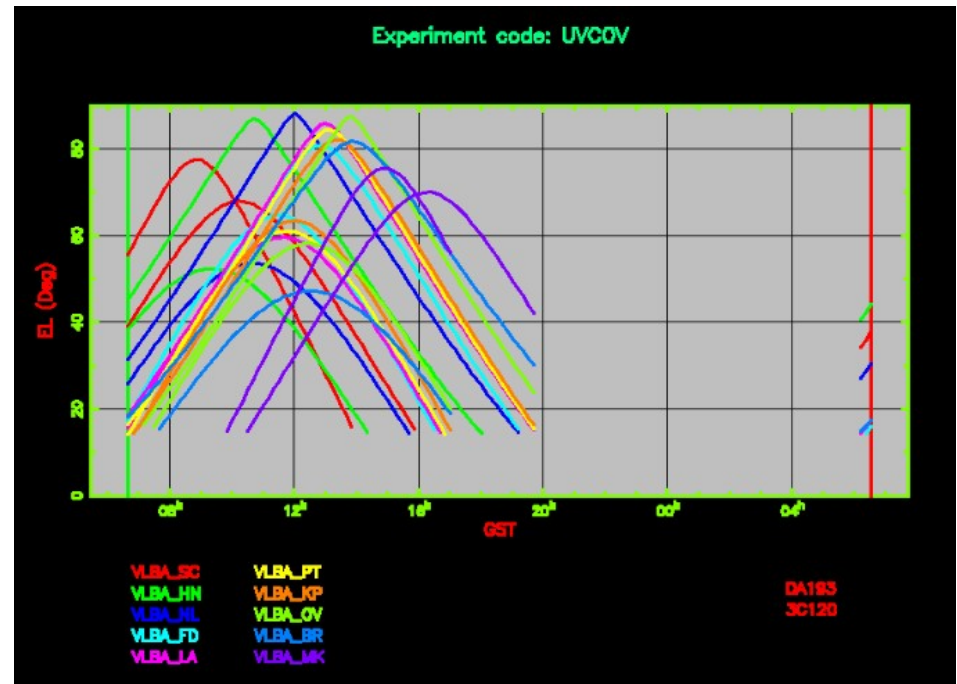
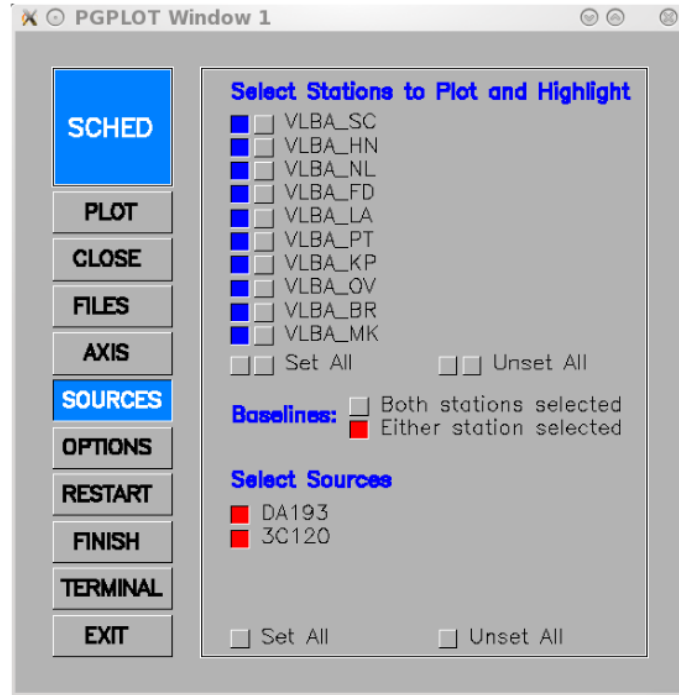
For continuum you can also use just NRAO defaults

Briefly on Observation Preparation

VLBA: SCHED software

Information: <https://science.nrao.edu/facilities/vlba/docs/manuals/propvlba/sched>

Documentation: <http://www.aoc.nrao.edu/software/sched/index.html>



Resources

Student Observing Support (SOS) Program

→ competitive student funding in support of successful highly ranked proposals (NRAO)

<https://science.nrao.edu/opportunities/student-programs/sos>

Publication support

→ NRAO provides publication support for qualified papers, proportionate to the page charges of qualified authors

<https://library.nrao.edu/pubsup.shtml>

Observing support pages

→ one stop page for guides for process of proposing for and using NRAO observing time

<https://science.nrao.edu/observing>

Science helpdesk – contact us, ask questions: <https://help.nrao.edu/>



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