VLA/VLBA Call for Proposals 2022B

Amy Mioduszewski

NRAO Call for Proposals: Semester 2022B

https://science.nrao.edu/observing/call-for-proposals/2022b

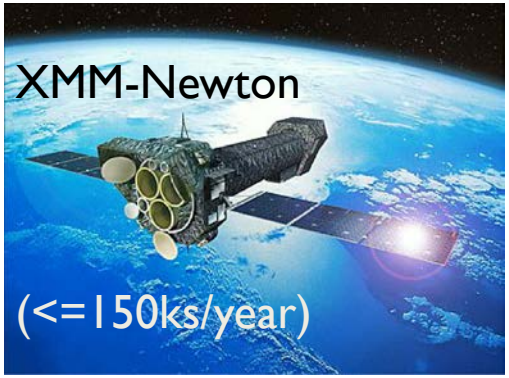
Submission deadline for Semester 2022B proposals is Tuesday, 1 February 2022, at 17:00 EST (22:00 UTC).

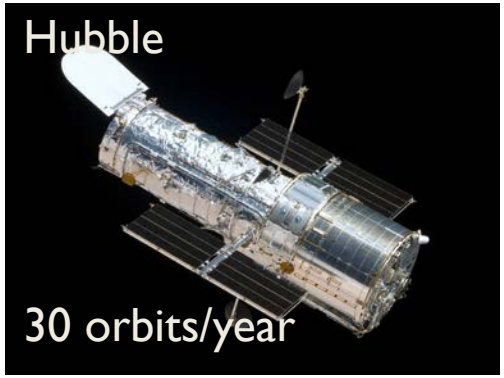
Joint Proposals Between VLA, GBT, and VLBA require separate proposals for each (with the same scientific justification), except as elements of the High Sensitivity Array.

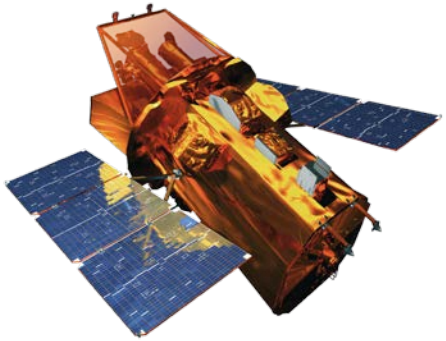
Joint Proposals with External Facilities

https://science.nrao.edu/observing/call-for-proposals/2022b/joint-proposals

VLA & VLBA proposals can request joint observations with space missions. Funding can be requested once time is granted.







Swift Observatory
(<=300ks/year)

Fermi Gamma-ray
Space Telescope

Types of Proposals

Proposals submitted at deadlines:

- Regular (<200h) ≤4 pages science justification
- Large (≥200h) ≤10 pages science justification; requires data reduction and release plan
- Triggered ≤4 pages science justification
  - observations of transients whose event times are unknown a priori; well-defined triggering criteria are required

Director's Discretionary Time (any time)

- Target of Opportunity (unexpected, unpredicted)
  - Need good reason why not proposed at regular deadline as a triggered proposal
- Exploratory Time for high risk/high yield or last minute projects
  - Need good reason why not proposed at regular deadline
- Education and public outreach (e.g. create an iconic image or educational opportunity)

Other Considerations:

- High Risk
  - As means to maximize scientific impact through cutting-edge observations.
- Commensal Observing:
  - The Observatory may support two kinds of commensal observing: commensal observing projects, and commensal systems.
- Filler Programs:
  - Some programs are not time critical, strongly dependent on array configuration, or require highly subscribed LST ranges. Such programs may be able to take advantage of "filler" time.
- Student Observing Support Program (https://science.nrao.edu/opportunities/student-programs/sos)
  - Competitive student funding in support of successful highly ranked proposals.

Observing Types

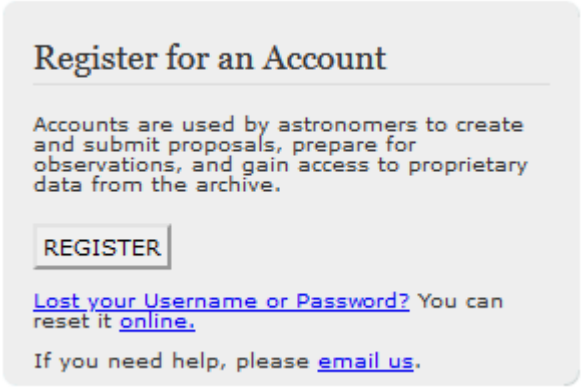
- General Observing (GO): Well tested, standard observing modes.

- Shared Risk Observing (SRO): Access to extra capabilities not as well tested as GO.

- Resident Shared Risk Observing (RSRO): Access to capabilities that are not commissioned or generally available.
  - One month of dedicated commissioning effort is expected for every 20 hours of telescope time awarded.
  - The period(s) of participation (residency) can be in person or remotely and may occur in advance of the observing time awarded.
  - For more detailed information consult: https://go.nrao.edu/vla-rsro

Proposal Submission Tool

- The PI and all Co-I's will need a "my.nrao.edu" account. To register, go to: https://my.nrao.edu



- Access the proposal submission tool through the portal, under the tab: Proposals

- Then you can click on New Proposal

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

Helpdesk

If you need help for any reason, you can get in touch with scientific staff through the NRAO helpdesk using your my.nrao.edu account at https://help.nrao.edu/.

Department Descriptions:

CASA Data Reduction - Queries/issues on data reduction using CASA

AIPS Data Reduction - Queries/issues on data reduction using AIPS

VLA Observing - Observing strategies and guidelines, SB preparation/verification, Observation Preparation Tool (OPT, RCT, SCT), VLA Calibrators, VLA data quality and issues

VLA/GBT/VLBA Proposing - Proposal preparation, call for proposals, available capabilities, Sensitivity/Exposure Calculators, GBT Mapping Calculator, VLA GOST, NRAO Proposal Submission Tool (PST)

VLA/VLBA Archive and Data Retrieval - NRAO archive tool (AAT), accessing and downloading data, remote access to data

VLA/GBT/VLBA Proposal Review - Questions from NRAO SRP and TAC members, Proposal Handling Tool (PHT)

VLA Pipeline - General VLA pipeline queries, request access to pipeline products, questions on using/running the pipeline

VLA Scheduling Support - project availability in the OPT, general scheduling issues/concerns

Visitor Support - New Mexico - questions about visiting NRAO-Socorro. NOTE: for visitor requests, please register using this linked form

VLA General Queries - Webpages, documentation, access/registration to my.nrao.edu, etc.

VLA Sky Survey - VLASS queries including technical questions and accessing the survey data

VLA Data Products - Calibrated measurement sets and quality assured data products from the VLA pipeline

Please submit your questions well before the deadline. We attempt to respond as quickly as we can, especially before a proposal deadline.

VLA Call for Proposals 2022B

Amy Mioduszewski

The (Karl G. Jansky) Very Large Array Interferometer in a Nutshell

Located in New Mexico, on San Agustin Plains, 6970 ft (2120m) altitude

- 27(+1) 25-meter diameter dishes
- Arranged in Y-shape
- Reconfigurable: Baseline lengths 35m - 36.4 km in 4 configurations
- Observes North of -48 degrees declination
- Frequency coverage (54-86 MHz, 200-500 MHz, 1-50 GHz)

Proposal Deadlines and VLA Configurations

(may be subject to change)

Semester	Observing Period	Configuration	Proposal Deadline
--	2023 Jun 02 – 2023 Jun 19	BnA	--*
2023A	2023 Jan 18 – 2023 May 29	B	2022 Aug 01
2022B	**2022 Oct 06 – 2023 Jan 03**	**C**	**2022 Feb 01**
2022A	2022 Jul 22 – 2022 Sep 26	D	2021 Aug 02
2022A	2022 Mar 04 – 2022 Jul 05	A	2021 Aug 02

*VLASS only

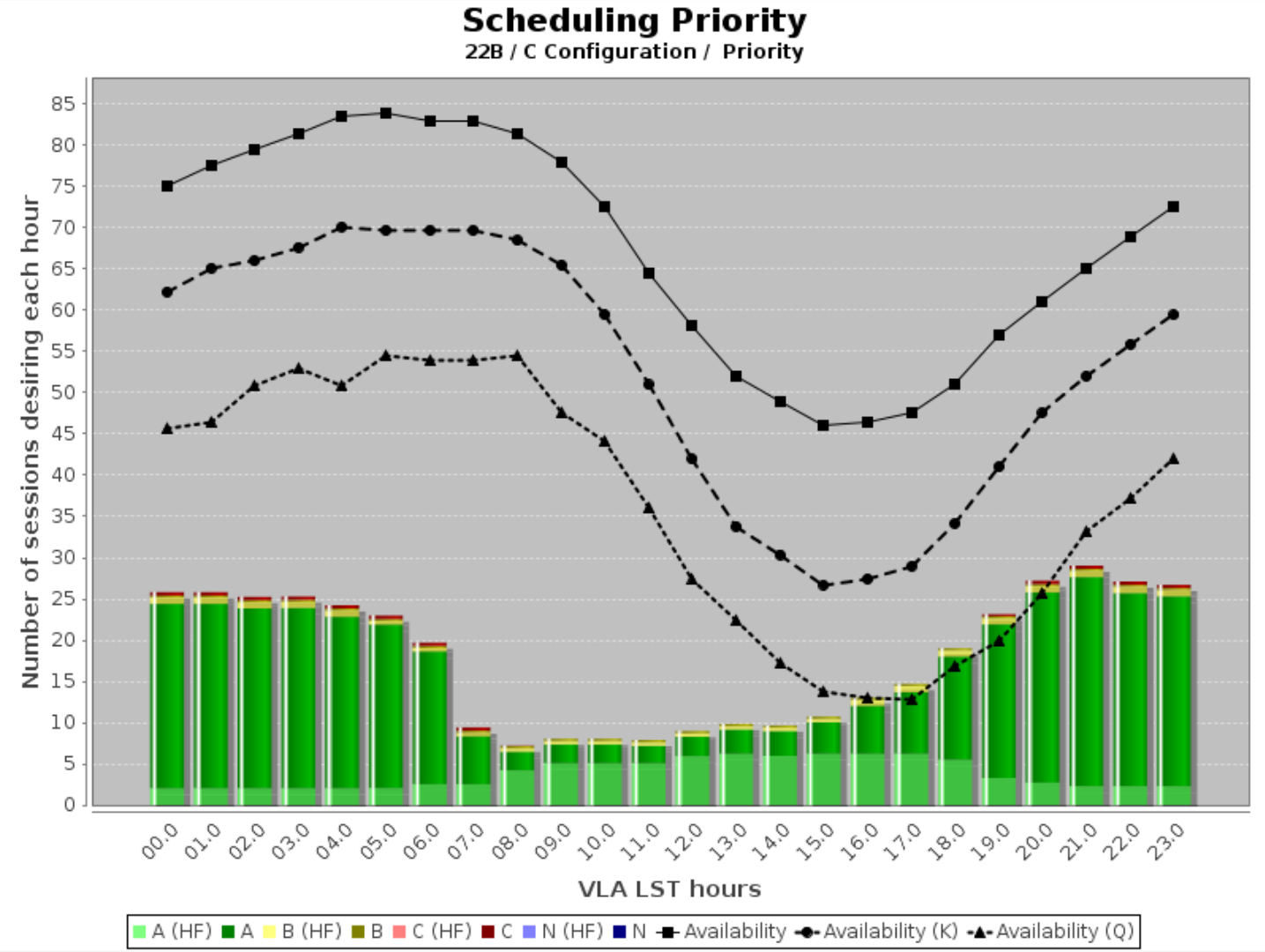
2022B corresponds to **C** configuration of the VLA:

Baseline lengths: 35 m – 3.5 km / Resolution: 260"-0.47" (4–Q)

Proposals are accepted for:

- 2022B observing period;
- Multi-configuration that include C configuration
- Configurations that fall in semester 2023A (or later) may be submitted by a graduate student PI.

2022B Available Observing Hours



VLA Capabilities for 2022B (1/2)

- 8-bit samplers:
  - Standard full polarization default setups:
    - 2 GHz bandwidth continuum S/C/X/Ku/K/Ka/Q bands (16x128 MHz)
    - 1 GHz bandwidth continuum at L-band (16x64 MHz)
    - 256 MHz bandwidth at P-band (16x16 MHz)
    - 12 MHz bandwidth for Stokes I continuum at 4-band (3x4 MHz)
    - Dual 4/P-band for Stokes I continuum observations only
  - Flexible setups for spectroscopy (2x1 GHz basebands, with up to 32 subbands each)
- 3-bit samplers:
  - 8 GHz bandwidth continuum observations at K/Ka/Q-bands
  - 6 GHz bandwidth continuum observations at Ku-band
  - 4 GHz bandwidth continuum observations at C/X-bands
  - Flexible setups for spectroscopy (4x2 GHz; up to 16 subbands each)

VLA Capabilities for 2022B (1/2)

- Mixed 3-bit and 8-bit samplers: Allows for simultaneous and high-resolution spectral line observing
- Subarrays: Up to 3 independent subarrays using 8-bit continuum, single instrument configuration in each subarray
- Y27/Y1 for VLBI: Phased Array 27 antennas or 1 VLA antenna
- Solar observing: Except L-band reverse-coupled system
- On-The-Fly Mosaicing (OTF): P/L/S/C-bands, no subarrays
- Pulsar: Phase-binned and coherent-dedispersion (YUPPI) pulsar observing, except 4-band YUPPI
- Data Rates up to 60 MB/s (216 GB/hours)

VLA Shared Risk Observing

- On-the-Fly mosaicking for X-, Ku-, Ka-, and Q-bands (excl. subarrays).

- eLWA: Joint Long Wavelength Array and VLA 4m band observations using a single 8 MHz subband centered at 76 MHz and 4-bit VDIF output.

VLA Resident Shared Risk Observing

Examples of capabilities under RSRO

- 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
- 4-band coherent-dedispersion (YUPPI) pulsar observing
- complex phased array observations
  (e.g. pulsar and complex VLBI observing modes)
- Frequency averaging in the correlator
- Rapid response capabilities
- eLWA with other options than under SRO;
  e.g. 16 MHz bandwidth, and/or 8-bit VDIF

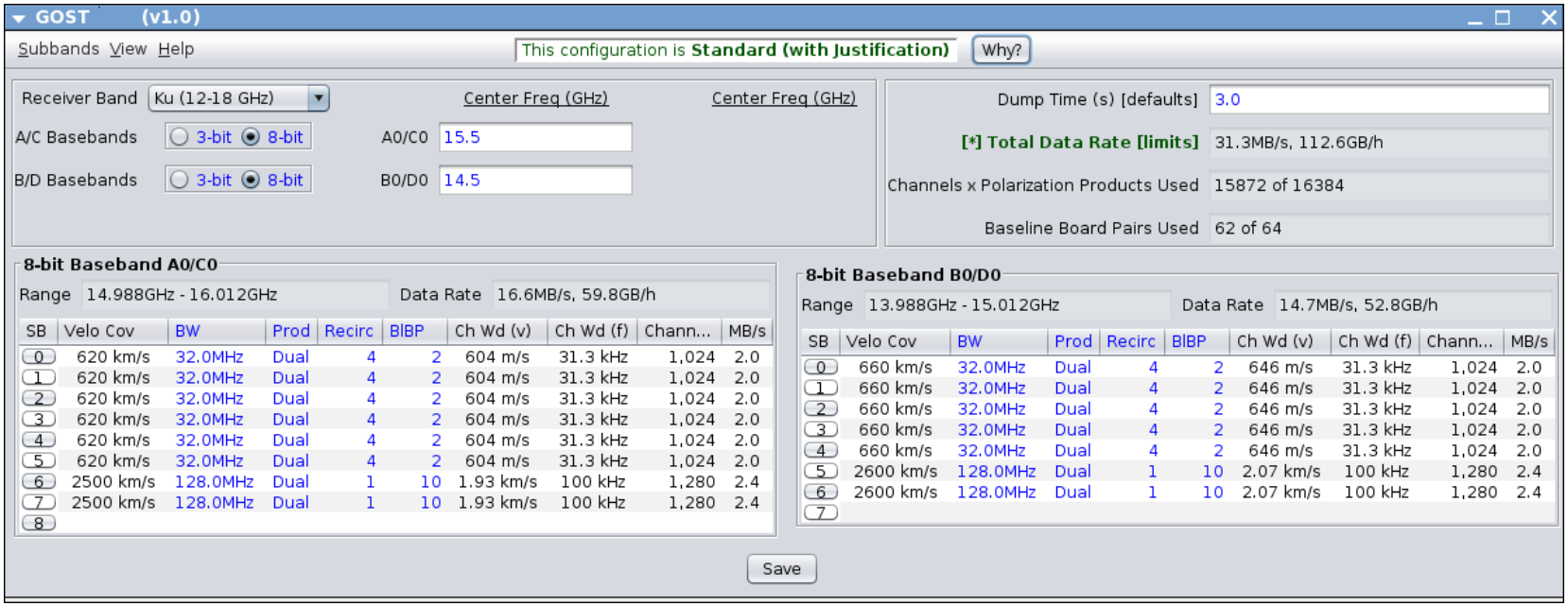
Active Commensal Observing Systems

- VLA Low Band Ionospheric and Transient Experiment (VLITE) (https://vlite.nrao.edu)
  - 64 MHz of bandwidth 320 – 384 MHz; ~15 antennas
  - Pipelines for Imaging, Ionosphere, and real-time transients
  - Always-on, except when observing at P-band itself

- real-time fast transients at the VLA: realfast (https://realfast.io)
  - enabled for default setups for continuum full polarization observations at L, S, C, X
  - blind search for fast transients, like FRBs, for arcsec localization

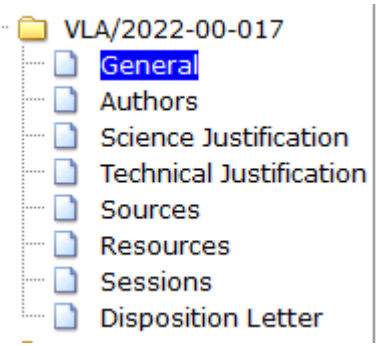
GOST (https://go.nrao.edu/gost)

For spectral line observation setups you will need to use the General Observing Setup Tool (or the Resource Catalog Tool) and upload your screenshot to the PST.



Note: 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.

Sessions



After you specify your targets and observing setups (resources), you need to define sessions.

Important: sessions are not observing blocks!

SESSIONS

Important advice on information for creating VLA Sessions can be found here.

« ‹ Sessions › »

Session	Number of Sessions	Separation	Min. Start LST	Max. End LST	Min. Elevation
Session1	2 X 3.0	30 day	21:53:55	10:43:02	15
Scheduling Constraints:			Comments:		Edit

Source Groups	Resources	Time/Session (hrs)	Add
GroupA - LST4	C	1.50	
GroupA - LST4	X	1.50	

Session2	1 X 2.0	0 day	10:06:45	23:19:12	15

To get the best determination of scheduling priority by the Time Allocation Committee it is recommended:

- 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.

Some notes on the 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

VLA LST at Midnight Mountain Time (hours)

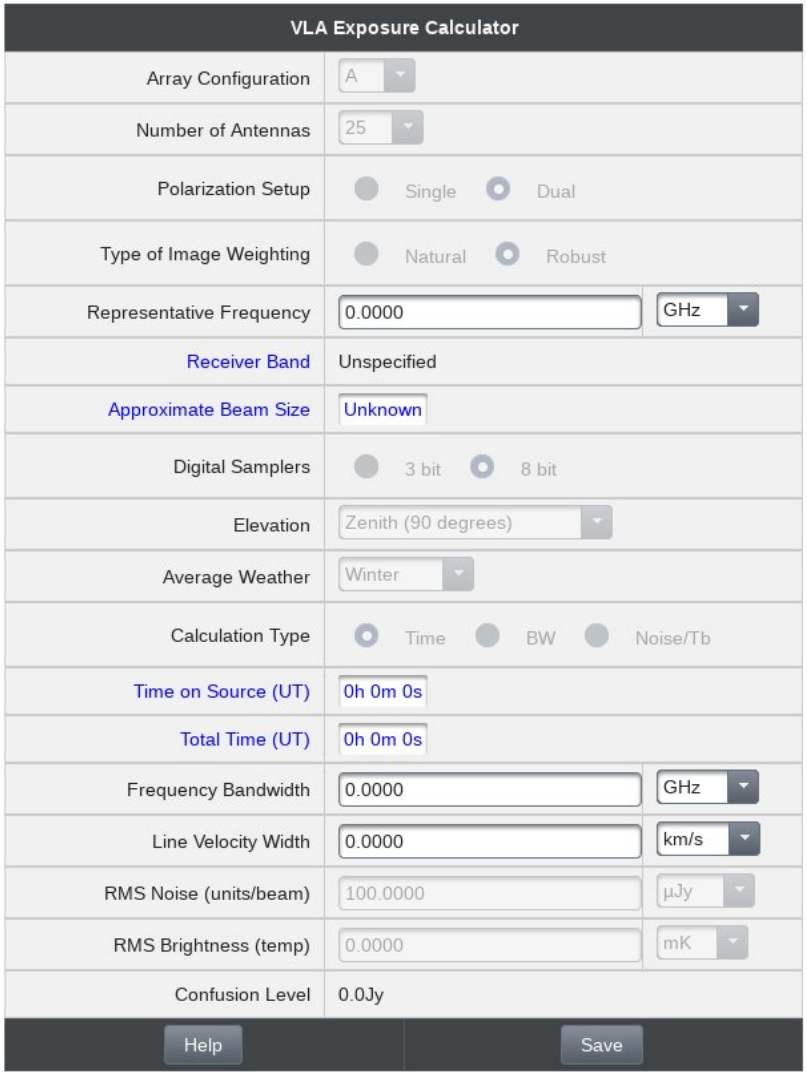
Jan 1	Feb 1	Mar 1	Apr 1	May 1	Jun 1
6.4	8.4	10.4	11.4	13.4	15.4
Jul 1	**Aug 1**	**Sep 1**	**Oct 1**	**Nov 1**	**Dec 1**
17.4	19.4	21.4	23.4	1.4	4.4

Some notes on the Technical Justification

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

- **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, etc.

Exposure Calculator



Carefully review the documentation:
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.

Resources

- NRAO helpdesk: help.nrao.edu
- The VLA and VLBA Call for Proposals: go.nrao.edu/cfp
- The VLA and VLBA Observational Status Summaries:
  - VLA: go.nrao.edu/vla-oss
  - VLBA: go.nrao.edu/vlba-oss
- Proposing Guides:
  - VLA: go.nrao.edu/vla-prop
  - VLBA (and HSA & Global VLBI): go.nrao.edu/vlba-prop-doc

- 2022B Proposal Deadline: February 1, 2022 at 5:00 PM EST (22:00 UT)

www.nrao.edu
science.nrao.edu
public.nrao.edu

The National Radio Astronomy Observatory is a facility of the National Science Foundation operated under cooperative agreement by Associated Universities, Inc.