



# **VLA and VLBA Proposal Preparation**

**Emmanuel Momjian**



# Creating NRAO/LBO/GBO proposals

- Proposal Submission Tool (PST)
  - VLA, VLBA, GBT, **but ...**
  - for ALMA, use ALMA OT
- Many elements in the PST are common to the VLA, VLBA, and the GBT. However, differences will be noted as needed.
- Accessing the PST
  - You must be registered at [my.nrao.edu](http://my.nrao.edu)

# Creating an NRAO/LBO/GBO proposal

## Register and login at my.nrao.edu



### Login

Username:

Password:

LOGIN

clear

### 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.

REGISTER

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

If you need help, please [email us](#).

[Staff](#) | [Policies](#) | [Diversity](#)



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

- Gives access to various services:
  - Proposal preparation
    - Allows creating and submitting new proposals
    - Gives access to all proposals you are associated with regardless of your role (PI, co-I, contact author, reviewer)
  - Data Processing
  - VLA Observation Preparation Tool (OPT)
  - The VLA, VLBA, GBT data archive

## Options

### ■ Dashboard

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

## DASHBOARD

### Web Browser

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

**Warning: there are problems uploading files to the PST with Safari.**

### User Accounts

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

**Do not create a new account.**

### Telescope News

Next Proposal Deadline: August 01, 2017 5 PM EDT (21 hours UT) in 29 days

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

**Important All proposal authors must be registered users**

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

[VLA Configuration Plans and Proposal Deadlines](#)

# Timeline: Proposal Deadlines

- Two per year: Typically February 1 and August 1
- Next deadline: August 1<sup>st</sup> for 2019A (i.e., first half of 2019).
- The VLA configurations in 2019A are
  - A (most extended,  $B_{\max}=36.4$  km), and
  - B (2<sup>nd</sup> most extended,  $B_{\max}=11.1$  km).
- Note: Director's Discretionary Time proposals are not subject to these deadlines (more on this later).

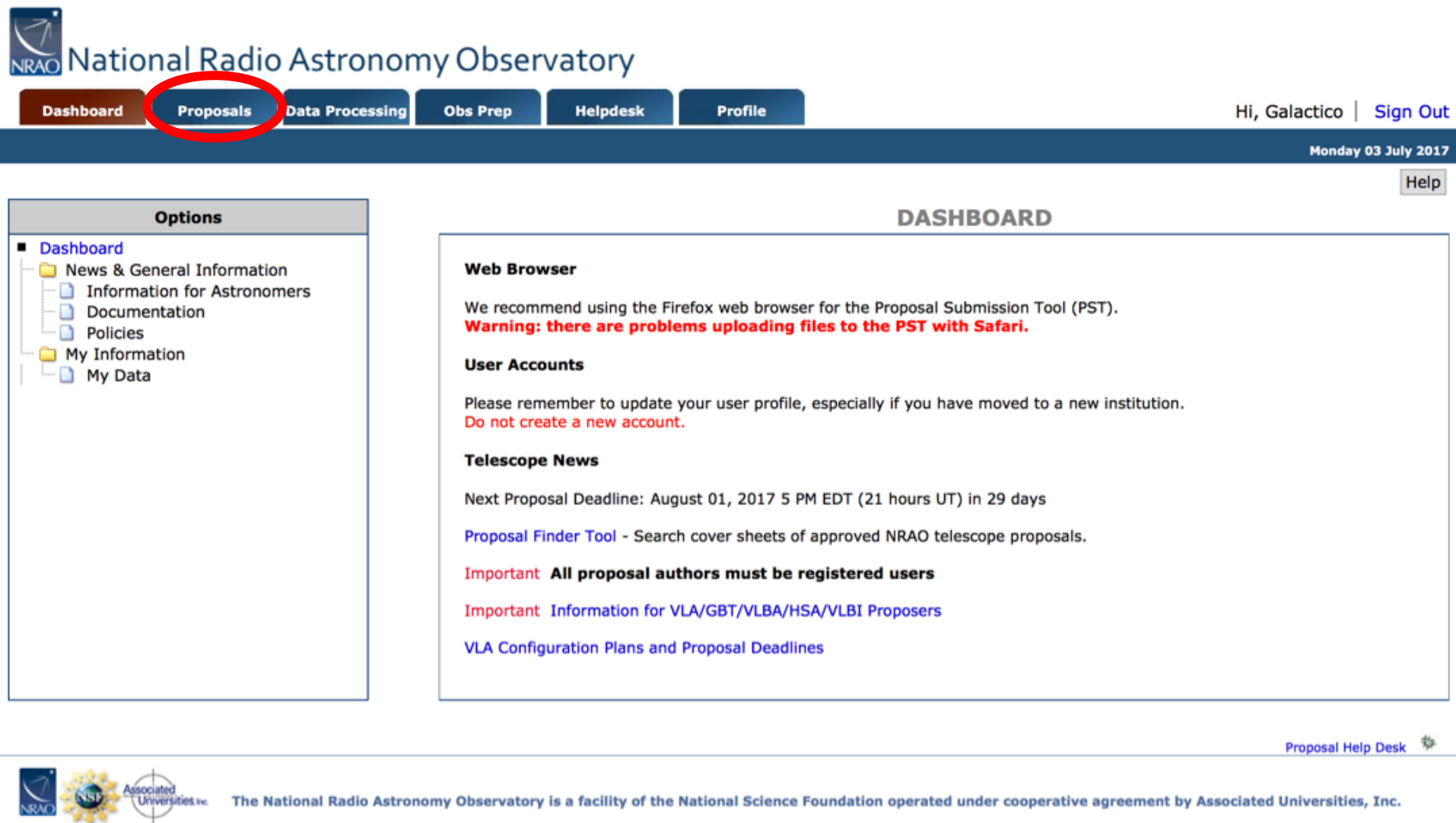
# Timeline: After deadline

- Proposals are evaluated by the Science Review Panels (SRPs) and the Time Allocation Committee (TAC)
- Observers are informed of allocated time (if any) and scientific priority (A, B or C) in a “disposition letter” about a month before next call.
- Proposal scheduling priorities:
  - A: Highest priority, most likely to be observed;
  - B: Next highest priority, scheduled on best effort basis;
  - C: Filler time
- For VLA: Schedules can be submitted about a month before configuration.
  - If needed, schedules can be made in advance as a Test project in the OPT to seek advise/validation.
- For VLBA: Schedules can be submitted once disposition letter goes out.

# Types of proposals

- Proposals submitted at deadlines:
  - Regular ( $< 200\text{h}$ )  $\leq 4$  pages science justification
  - Large ( $\geq 200\text{h}$ )  $\leq 10$  pages science justification; requires data reduction and release plan
  - Triggered  $\leq 4$  pages science justification
    - pre-planned observations of transients whose event times are unknown a priori; well-defined triggering criteria are required
- Director's Discretionary Time
  - Not tied to proposal deadline, limited time request
  - For a Target of Opportunity (unexpected, unpredicted, e.g. supernova in nearby galaxy) or
  - Exploratory Time for high risk/high yield or last minute projects
    - Must have a good reason for why this was not proposed at a regular deadline.

# Log into my.nrao.edu and go to “Proposals”




The screenshot shows the my.nrao.edu website interface. At the top, the NRAO logo and name are displayed. Below this is a navigation bar with tabs: Dashboard, **Proposals** (highlighted with a red circle), Data Processing, Obs Prep, Helpdesk, and Profile. To the right of the navigation bar, the user is logged in as 'Hi, Galactico' with a 'Sign Out' link. The date 'Monday 03 July 2017' and a 'Help' button are also visible.

The main content area is divided into two sections. On the left, under the 'Options' header, there is a 'Dashboard' section with a tree view containing: News & General Information (sub-items: Information for Astronomers, Documentation, Policies), My Information (sub-item: My Data). On the right, under the 'DASHBOARD' header, there are three sections: 'Web Browser' (recommending Firefox and warning about Safari), 'User Accounts' (reminding users to update their profile), and 'Telescope News' (announcing the next proposal deadline and providing links to the Proposal Finder Tool, important information for proposal authors, and VLA configuration plans and deadlines).

At the bottom of the page, there is a footer with logos for NRAO, NSF, and Associated Universities, Inc., and a statement: 'The National Radio Astronomy Observatory is a facility of the National Science Foundation operated under cooperative agreement by Associated Universities, Inc.'

# Click on “New Proposal”

 National Radio Astronomy Observatory

Dashboard

Proposals

Data Processing

Obs Prep

Helpdesk

Profile

Hi, Galactico | [Sign Out](#)

My Proposals

Available Authors

Available Organizations

July 2017

[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: 3 Page: 1 of 1

Options

Status:  
ALL




Telescope:  
ALL

Trimester / Semester:  
ALL

Year:  
ALL

Proposal	Legacy ID	Title	P.I. Name	Created	Submitted	Status
<a href="#">VLBA/2017-06-001</a>		Resolving the nuclear power source in z~6 QSOs	Galactico Armenian	07/03/2017		DRAFT
<a href="#">GBT/2017-06-001</a>		A blind spectral line survey in Andromeda	Galactico Armenian	07/03/2017		DRAFT
<a href="#">VLA/2017-06-001</a>		Discovering the Cosmos	Galactico Armenian	07/01/2017		DRAFT

[Proposal Help Desk](#)



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# Select type of proposal and then “Create”


[Dashboard](#) [Proposals](#) [Data Processing](#) [Obs Prep](#) [Helpdesk](#) [Profile](#)

Hi, Galactico | [Sign Out](#)


[My Proposals](#) [Available Authors](#) [Available Organizations](#)

Monday, July 2017


[Create](#) [Help](#)




☒ VLA



☐ GBT




☐ VLBA/HSA



☐ GMVA

# “Blank” proposal now appears in “My Proposals”

 National Radio Astronomy Observatory

Dashboard Proposals Data Processing Obs Prep Helpdesk Profile

Hi, Galactico | Sign Out

Monday 03 July 2017

My Proposals Available Authors Available Organizations

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

Search

Options

Status: ALL

Telescope: ALL

Trimester / Semester: ALL

Year: ALL


Proposal	Legacy ID	Title	P.I. Name	Created	Submitted	Status
VLA/2017-06-008		This is a blank proposal created on Monday July 3, 2017	Galactico Armenian	07/03/2017		DRAFT
VLBA/2017-06-001		Resolving the nuclear power source in 2-6 QSOs	Galactico Armenian	07/03/2017		DRAFT
GBT/2017-06-001		A blind spectral line survey in Andromeda	Galactico Armenian	07/03/2017		DRAFT
VLA/2017-06-001		Discovering the Cosmos	Galactico Armenian	07/01/2017		DRAFT

Proposal Help Desk

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

Click on the name of the proposal to see its subsections and edit them.

# General information

National Radio Astronomy Observatory

Dashboard

Proposals

Data Processing

Obs Prep

Helpdesk

Profile

Hi, Galactico | [Sign Out](#)

Monday 03 July 2017

Validate

Print

Submit

My Proposals

Available Authors

Available Organizations

Edit


Help

Options

My Proposals

- VLA/2017-06-008
  - General**
  - Authors
  - Science Justification
  - Technical Justification
  - Sources
  - Resources
  - Sessions
  - Disposition Letter
- VLA/2017-06-001
- GBT/2017-06-001
- VLA/2017-06-001

GENERAL

Observing Proposal

**Status:** DRAFT  
**Create Date:** 07/03/2017  
**Modify Date:** 07/03/2017  
**Submit Date:**  
**Total Time:** 0.0

**Title**  
This is a blank proposal created on Monday July 3, 2017

**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**

Proposal Help Desk

# Major Elements of a Proposal

- General (Title, Type, Abstract, etc....)
- Authors
- Science Justification
- Technical Justification
- Sources – what do you want to observe
- Resources – instrumental setup
- Sessions – which of your sources do you want to observe with which of your resources
- Disposition Letter (will contain a copy of the disposition letter after the proposal review process)

# Click “Edit”

## Options

### My Proposals

- VLA/2017-06-008
  - [General](#)
  - [Authors](#)
  - [Science Justification](#)
  - [Technical Justification](#)
  - [Sources](#)
  - [Resources](#)
  - [Sessions](#)
  - [Disposition Letter](#)
- VLBA/2017-06-001
- GBT/2017-06-001
- VLA/2017-06-001

## GENERAL

« < General > »



## Observing Proposal

**Status:** DRAFT

**Create Date:** 07/03/2017

**Modify Date:** 07/03/2017

**Submit Date:**

**Total Time:** 0.0

### Title

This is a blank proposal created on Monday July 3, 2017

### 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

# General section

Validate
Print
Submit

Cancel
Save
Help

**Options**

- My Proposals
  - VLA/2017-06-008
    - General
    - Authors
    - Science Justification
    - Technical Justification
    - Sources
    - Resources
    - Sessions
    - Disposition Letter
  - VLBA/2017-06-001
  - GBT/2017-06-001
  - VLA/2017-06-001

**GENERAL** (changes will auto-save in 10 minutes)

## Observing Proposal

**Status:** DRAFT

**Create Date:** 07/03/2017

**Modify Date:** 07/03/2017

**Submit Date:**

**Total Time:** 0.0

**Title** (80 characters max)

This is a blank proposal created on Monday July 3, 2017

**Proposal Type**

☒ Regular
☐ Large
☐ Triggered
☐ Director's Discretionary Time

**Proposal Sponsor**

Sponsor: Not Sponsored

**Scientific Category** (Click [here](#) for additional information about Proposal Science Categories)

- ☐ Active Galactic Nuclei (Active galactic nuclei: Seyferts; low-luminosity AGN; H2O megamasers; radio galaxies; blazars; quasars/QSOs; environmental interactions)
- ☐ Energetic Transients and Pulsars (X-ray binaries, cataclysmic variables, supernovae, gamma-ray bursts, pulsars)
- ☐ Extragalactic Structure (Galaxies (line): galaxy structure; galaxy kinematics and dynamics; galaxy chemistry; gas in galaxies)
- ☐ High Redshift and Source Surveys (High-Z objects; extragalactic source surveys; galaxy formation; gravitational lenses; CMB; early universe)
- ☐ Interstellar Medium (galactic HI & OH; ISM magnetic field; SNRs; HII regions; astrochemistry)
- ☐ Normal Galaxies, Groups, and Clusters (Galaxies (continuum), groups, clusters: disk emission; star formation; magnetic fields; galactic winds; starbursts; intracluster emission)
- ☐ Solar System, Stars, Planetary Systems (Sun, planets, comets, IPM; exoplanets; main sequence stars; active stars; stellar winds; AGB & post-AGB stars; PNe; novae)
- ☐ Star Formation (young stellar objects; protostars; jets, outflows; T Tauri stars; circumstellar disks; protoplanetary systems; astrochemistry)

**Abstract** (200 words max, 10 min) [Word Count : 0]

# General section

## Joint

If you are submitting a joint proposal please see the instructions [here](#).

- ☐ GBT
- ☐ VLBA
- ☐ HST    Orbits Requested  ▲▼
- ☐ Swift    Ksec.  ▲▼
- ☐ Chandra Ksec.  ▲▼

## Observing Type(s)

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Continuum            | <input type="checkbox"/> Spectroscopy           | <input type="checkbox"/> Polarimetry   |
| <input type="checkbox"/> Single Pointing(s)   | <input type="checkbox"/> Grid Mapping/Mosaicing | <input type="checkbox"/> OTF Mapping   |
| <input type="checkbox"/> Sun                  | <input type="checkbox"/> Monitoring             | <input type="checkbox"/> Solar System  |
| <input type="checkbox"/> High Time Resolution | <input type="checkbox"/> Pulsar                 | <input type="checkbox"/> Radar         |
| <input type="checkbox"/> Geodesy              | <input type="checkbox"/> Astrometry             | <input type="checkbox"/> VLA Subarrays |
| <input type="checkbox"/> Other                |   |  |

## Dissertation Research Plan

Dissertation Plan is now associated with author(s) and must be set on the Author's page.  
Dissertation Plan section will appear when a student author is marked "Observing For Thesis".

## Related Proposals

# General section

Validate

Print

Submit

CancelSaveHelp


GENERAL (changes will auto-save in 10 minutes)

« < General > »

Options

My Proposals

- VLA/2017-06-008
  - General
  - Authors
  - Science Justification
  - Technical Justification
  - Sources
  - Resources
  - Sessions
  - Disposition Letter
- VLBA/2017-06-001
- GBT/2017-06-001
- VLA/2017-06-001

Observing Proposal

Status: DRAFT  
Create Date: 07/03/2017  
Modify Date: 07/03/2017  
Submit Date:  
Total Time: 0.0

Title (80 characters max)  
This is a blank proposal created on Monday July 3, 2017

Proposal Type

☒ Regular☐ Large☐ Triggered☐ Director's Discretionary Time

Proposal Sponsor

Sponsor: Not Sponsored

Scientific Category (Click [here](#) for additional information about Proposal Science Categories)

☐ Active Galactic Nuclei (Active galactic nuclei: Seyferts; low-luminosity AGN; H2O megamasers; radio galaxies; blazars; quasars/QSOs; environmental interactions)

☐ Energetic Transients and Pulsars (X-ray binaries, cataclysmic variables, supernovae, gamma-ray bursts, pulsars)

☐ Extragalactic Structure (Galaxies (line): galaxy structure; galaxy kinematics and dynamics; galaxy chemistry; gas in galaxies)

☐ High Redshift and Source Surveys (High-Z objects; extragalactic source surveys; galaxy formation; gravitational lenses; CMB; early universe)

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☐ Star Formation (young stellar objects; protostars; jets, outflows; T Tauri stars; circumstellar disks; protoplanetary systems; astrochemistry)

Abstract (200 words max, 10 min) [Word Count : 0]

Joint

If you are submitting a joint proposal please see the instructions [here](#).

☐ GBT

☐ VLBA

☐ HST

Orbits Requested

1

☐ Swift

Ksec.

0

☐ Chandra

Ksec.

0

# Authors Section

My Proposals Available Authors Available Organizations Monday 03 July 2017

Validate Print Submit

Options

- My Proposals
  - VLA/2017-06-008
    - General
    - Authors
    - Science Justification
    - Technical Justification
    - Sources
    - Resources
    - Sessions
    - Disposition Letter
  - VLBA/2017-06-001
  - GBT/2017-06-001
  - VLA/2017-06-001

**AUTHORS**

All proposal authors must be registered users.


Principal Investigator: Galactico Armenian Contact: Galactico Armenian

Order	Name	Email	Affiliation	Dissertation Plan	Add
up / down	Galactico Armenian	emomjian@gmail.com	National Radio Astronomy Observatory	N/A	

- Will automatically have you as PI and Contact author.
- Add authors with Add button
  - Co-authors need to be in the my.nrao.edu database.
- Move authors up and down on list by using up/down
- Can reassign PI and Contact author

# Scientific Justification Section

Click “Add” to upload your Scientific Justification (PDF or txt file)

National Radio Astronomy Observatory

DashboardProposalsData ProcessingObs PrepHelpdeskProfile

Hi, Galactico | Sign Out

My ProposalsAvailable AuthorsAvailable Organizations

Monday 03 July 2017

ValidatePrintSubmit

Options

My Proposals

- VLA/2017-06-008
  - General
  - Authors
  - Science Justification
  - Technical Justification
  - Sources
  - Resources
  - Sessions
  - Disposition Letter
- VLBA/2017-06-001
- GBT/2017-06-001
- VLA/2017-06-001

SCIENCE JUSTIFICATION

« < Science Justification > »

Justification File




.pdf, .txt only; font size no less than 11pt; no more than 4 pages (including figures, tables, and references).

File Preview

Note: Only a preview. Please click on 'Download' to view the uploaded File.

AddHelp

Proposal Help Desk



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# Sources Section

Convert Export Import Copy Sources **New Source Group** Help

**SOURCES** << < Sources > >>

Proposers must specify their source lists (or potential targets) in full with the exception of Triggered proposals where the targets are unknown a priori.  
NOTE: If you update a source group after it has been attached to a session, you may have to un-attach and re-attach the source group for the changes to take effect.

Order	Name	Position	Velocity
-------	------	----------	----------

Sources can be added in three ways

- Creating “New Source Group” then:
  - add manually
  - search in NED/SIMBAD
- Copy from old proposal (“Copy Sources”)
- Load from local data file (“Import”)

# Sources Section

ConvertExportImportCopy SourcesNew Source GroupHelp

SOURCES

Proposers must specify their source lists (or potential targets) in full with the exception of Triggered proposals where the targets are unknown a priori.  
NOTE: If you update a source group after it has been attached to a session, you may have to un-attach and re-attach the source group for the changes to take effect.

Targets

No Sessionsup / down

Search NED/SIMBAD

Order	Name	Position	Velocity	Add
-------	------	----------	----------	-----

Once you create a group, you can add sources manually or by searching.

# Sources Section

Targets

No Sessions

up / down

Search NED/SIMBAD

Order	Name	Position	Velocity	Add
up / down 3C345	Coordinate System	Equatorial	Convention	Optical
	Equinox	J2000		
	Right Ascension	Value: 16:42:58.80 Range(±): 00:00:00.0	Ref. Frame	Barycentric
	Declination	Value: +39:48:36.9 Range(±): 00:00:00.0	Redshift	0.59280
	Calibrator	N		
up / down NGC4258	Coordinate System	Equatorial	Convention	Optical
	Equinox	J2000		
	Right Ascension	Value: 12:18:57.50 Range(±): 00:00:00.0	Ref. Frame	Barycentric
	Declination	Value: +47:18:14.3 Range(±): 00:00:00.0	Redshift	0.001541
	Calibrator	N		

# Resources Section

The screenshot displays the NRAO National Radio Astronomy Observatory web interface. At the top, the NRAO logo and name are visible. Below this is a navigation bar with buttons for Dashboard, Proposals, Data Processing, Obs Prep, Helpdesk, and Profile. The user is logged in as 'Hi, Galactico' and can click 'Sign Out'. The date '23 July 2017' is shown in the top right corner. The main navigation bar includes 'My Proposals', 'Available Authors', and 'Available Organizations'. On the left, there are icons for 'Validate', 'Print', and 'Submit'. The central area is titled 'VLA RESOURCES' and contains a table with columns: Order, Name, Configuration, Receiver, Back End, and Session. The 'Session' column has an 'Add' button circled in red. Above the table, there are buttons for 'Copy Resources' and 'Help', both also circled in red. On the left side, under 'Options', there is a tree view for 'My Proposals' with folders for VLA/2017-06-008, VLBA/2017-06-001, GBT/2017-06-001, and VLA/2017-06-001. The 'Resources' folder under VLA/2017-06-008 is highlighted.

- Click on “Copy Resources” if you want to copy from another proposal, or
- Click on “Add”.

# Resources Section

Adding a resource for continuum science:

## VLA RESOURCES

« < Resources > »

Order	Name	Configuration	Receiver	Back End	Session
		D	C Band 6 cm 4000-8(	General and Shared Risk Observing - Wideband	
<div><div><b>Basebands:</b></div><div><input checked="" type="radio"/> 2 x 1 GHz(8-bit) <input type="radio"/> 2 x 2 GHz(3-bit)</div><div><b>Total Bandwidth (GHz):</b> 2.0</div><div><b>Baseband Centers (GHz):</b> 5.5, 6.5</div><div><b>Polarization Products:</b> Full (2.0 MHz / ch)</div><div><b>Dump Time (s):</b> 5.0</div><div><b>Data Rate:</b> 2.4 MB/s, 8.5 GB/h</div></div> <div><a href="#">Save</a> <a href="#">Delete</a> <a href="#">Cancel</a></div>					

# Resources Section

## VLA RESOURCES

« < Resources > »

Order	Name	Configuration	Receiver	Back End	Session
	Ka-continuum	D	Ka Band 0.9 cm 26500 - 40000	General and Shared Risk Observing - Wideband	

**Basebands:**

☐ 2 x 1 GHz(8-bit)  
☒ 4 x 2 GHz(3-bit)

**Total Bandwidth (GHz):** 8.0

**Baseband Centers (GHz):** 30, 32, 34, 36

**Polarization Products:** Full (2.0 MHz / ch)

**Dump Time (s):** 3.0

**Data Rate:** 15.8 MB/s, 56.9 GB/h

Save

Delete

Cancel

# Resources Section

Adding a resource for spectral-line science:

VLA RESOURCES

Resources

Order	Name	Configuration	Receiver	Band	Session
	Q-spec-line	D	Q Band 0.7 cm 40000 - 50000 MHz	General and Shared Risk Observing - Spectral Line	

For Spectral Line Observing, the proposer should use the General Observing Set-up Tool (GOST) found at <http://go.nrao.edu/gost>

GOST is used to set up the WIDAR correlator configuration for the PST. Help on the use of this tool can be found from the link above or the GOST Help menu (upper left corner of the tool). Use the "Save" button on the tool to save a .png file which then must be uploaded in the "GOST Screen Shot" below. GOST will only work with Java version 7+.

**Note:** don't forget to choose the correct Receiver for this Resource!

Rest Frequencies:

44.060100 GHz

GOST Screen Shot:

Browse...

No file selected.

Save

Delete

Cancel

up / down	Ka-continuum	D	Ka Band 0.9 cm 26500 - 40000 MHz	General and Shared Risk Observing - Wideband	No Sessions
-----------	--------------	---	----------------------------------	--	-------------

# GOST (General Observing Setup Tool)

[go.nrao.edu/gost](http://go.nrao.edu/gost)

GOST 18A (v1.0)

This configuration is Standard

Receiver Band: Q (40-50 GHz)

Center Freq (GHz): 47.0

Center Freq (GHz): 45.0

A/C Basebands: 3-bit (selected), 8-bit

B/D Basebands: 3-bit (selected), 8-bit

A1/C1: 47.0

A2/C2: 45.0

B1/D1: 43.0

B2/D2: 41.0

Dump Time (s) [defaults]: 3.0

Total Data Rate [limits]: 0.0MB/s, 0.0GB/h

Channels x Polarization Products Used: 0 of 16384

Baseline Board Pairs Used: 0 of 64

3-bit Baseband A1/C1

Range: 45.976GHz - 48.024GHz

Data Rate: 0.0MB/s, 0.0GB/h

3-bit Baseband A2/C2

Range: 43.976GHz - 46.024GHz

Data Rate: 0.0MB/s, 0.0GB/h

3-bit Baseband B1/D1

Range: 41.976GHz - 44.024GHz

Data Rate: 0.0MB/s, 0.0GB/h

3-bit Baseband B2/D2

Range: 39.976GHz - 42.024GHz

Data Rate: 0.0MB/s, 0.0GB/h

Save

- click Subbands → Template... then adjust subband size, polarizations desired, recirculation and baseband pair stacking (BIBP) – recirculation and BIBP can be used to increase spectral resolution
- click Subbands → Fill 16 Subbands (or Fill 32 Subbands for 3 bit) → All A/C (or All B/D...)
- Refer to GOST section of “VLA Proposing Guide” at [go.nrao.edu/vla-prop](http://go.nrao.edu/vla-prop), especially “GOST Usage Hints”

# GOST (General Observing Setup Tool)

[go.nrao.edu/gost](http://go.nrao.edu/gost)

For the spectral line of interest at Q-band, using:

- 8-bit samplers
- 4 MHz subband with 2048 channels (use Recirc and BIBP)
- Full polarization products
- May add wide-band subbands for continuum (based on the science)
- **Note: blue color fields give drop-down menus.**
- Once done, save as a 'png' file and upload it to the spectral line resource

GOST 18A (v1.0)

Subbands View Help

This configuration is Standard

Receiver Band: Q (40–50 GHz) Center Freq (GHz): Center Freq (GHz):

A/C Basebands: ☐ 3-bit ☒ 8-bit A0/C0: 44.0

B/D Basebands: ☐ 3-bit ☒ 8-bit B0/D0: 43.0

Dump Time (s) [defaults]: 3.0

Total Data Rate [limits]: 11.8MB/s, 42.6GB/h

Channels x Polarization Products Used: 6144 of 16384

Baseline Board Pairs Used: 24 of 64

4-bit Baseband A0/C0

Range: 43.488GHz – 44.512GHz Data Rate: 9.9MB/s, 35.5GB/h

SB	Velo Cov	BW	Prod	Recirc	BIBP	Ch Wd (v)	Ch Wd (f)	Channels	MB/s
0	27 km/s	4.0MHz	Full	4	8	13.3 m/s	1.95 kHz	2,048	7.9
1	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
2	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
3	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
4	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
5	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
6	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
7	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
8	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25

8-bit Baseband B0/D0



Range: 42.488GHz – 43.512GHz Data Rate: 2.0MB/s, 7.1GB/h

SB	Velo Cov	BW	Prod	Recirc	BIBP	Ch Wd (v)	Ch Wd (f)	Channels	MB/s
0	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
1	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
2	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
3	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
4	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
5	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
6	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
7	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
8	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25

# Resources Section



Once done, it will look like:

## VLA RESOURCES

						Resources
Order	Name	Configuration	Receiver	Back End	Session	Add
up / down	 Ka-continuum	D	Ka Band 0.9 cm 26500 - 40000 MHz	General and Shared Risk Observing - Wideband	No Sessions	
up / down	 Q-spec-line	D	Q Band 0.7 cm 40000 - 50000 MHz	General and Shared Risk Observing - Spectral Line	No Sessions	

Expand

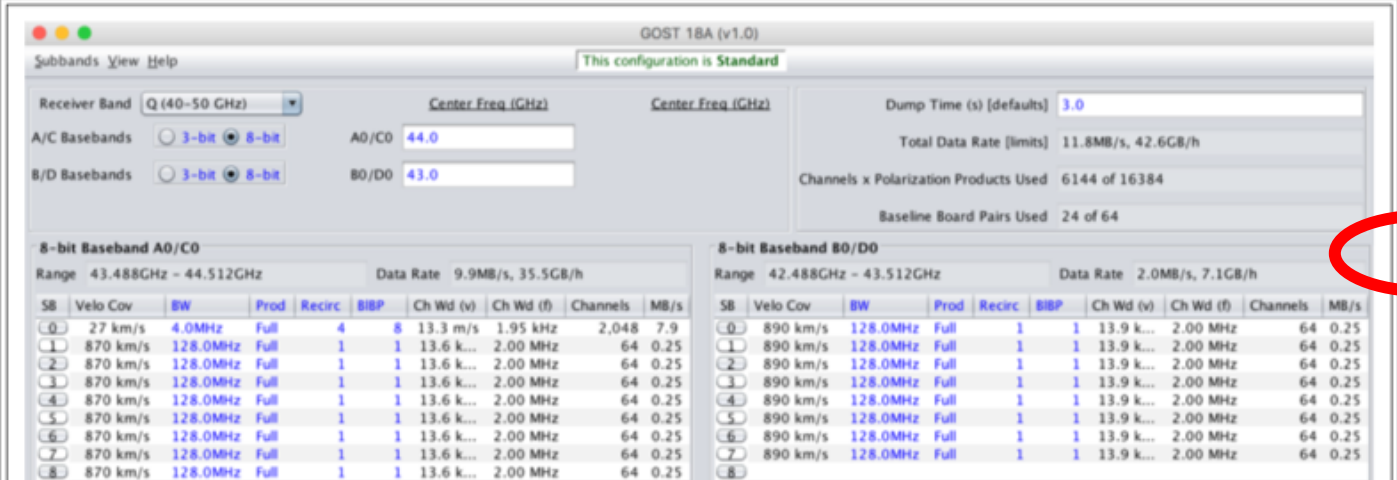
## VLA RESOURCES

						Resources
Order	Name	Configuration	Receiver	Back End	Session	Add
up / down	 Ka-continuum	D	Ka Band 0.9 cm 26500 - 40000 MHz	General and Shared Risk Observing - Wideband	No Sessions	
up / down	 Q-spec-line	D	Q Band 0.7 cm 40000 - 50000 MHz	General and Shared Risk Observing - Spectral Line	No Sessions	

Rest Frequencies:

44.069488 GHz

Observation Tool Screen Shot:



GOST 18A (v1.0)

This configuration is Standard

Receiver Band: Q (40-50 GHz) Center Freq. (GHz): 44.069488

A/C Basebands: 3-bit 8-bit A0/C0: 44.0

B/D Basebands: 3-bit 8-bit B0/D0: 43.0

Dump Time (s) [defaults]: 3.0

Total Data Rate [limits]: 11.8MB/s, 42.6GB/h

Channels x Polarization Products Used: 6144 of 16384

Baseline Board Pairs Used: 24 of 64

8-bit Baseband A0/C0

Range: 43.488GHz - 44.512GHz Data Rate: 9.9MB/s, 35.5GB/h

SB	Velo Cov	BW	Prod	Recirc	BIBP	Ch Wd (v)	Ch Wd (f)	Channels	MB/s
0	27 km/s	4.0MHz	Full	4	8	13.3 m/s	1.95 kHz	2,048	7.9
1	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
2	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
3	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
4	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
5	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
6	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
7	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25
8	870 km/s	128.0MHz	Full	1	1	13.6 k...	2.00 MHz	64	0.25

8-bit Baseband B0/D0

Range: 42.488GHz - 43.512GHz Data Rate: 2.0MB/s, 7.1GB/h

SB	Velo Cov	BW	Prod	Recirc	BIBP	Ch Wd (v)	Ch Wd (f)	Channels	MB/s
0	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
1	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
2	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
3	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
4	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
5	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
6	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
7	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25
8	890 km/s	128.0MHz	Full	1	1	13.9 k...	2.00 MHz	64	0.25

Edit

# Sessions-- connecting the Sources and Resources

## ...and some other details

New Session Help

### 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
Save the session (Source Groups / Resources) before calculating Min/Max LST					
Calculate Min/Max LST			EVLA Exposure Calculator		
<input type="text"/>	<input type="text" value="1"/>	<input type="text" value="0"/> day(s)	<input type="text" value="00:00:00"/> (HH:MM:SS)	<input type="text" value="24:00:00"/> (HH:MM:SS)	<input type="text" value="15"/>
Scheduling Constraints: <input type="text"/>			Comments: <input type="text"/>		Save Cancel

Source Groups	Resources	Time/Session (hrs)	
<input type="text" value="Targets"/>	<input type="text" value="Ka-continuum"/>	<input type="text"/>	

**Note:** Adding Source Groups to a session will automatically associate all sources, within the group, to the session.

- Click “New Session” on the top right
- Enter name and number and separation of epochs, and LST range on top line
- Click Add
  - Select a source group and a resource
  - Enter time per session

# Sessions

## 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
Save the session (Source Groups / Resources) before calculating Min/Max LST <span>Calculate Min/Max LST</span> <span>EVLA Exposure Calculator</span>					
<input type="text" value="Q-band"/>	<input type="text" value="4"/> X 2.5	<input type="text" value="0"/> day	<input type="text" value="10:36:53"/> (HH:MM:SS)	<input type="text" value="22:49:05"/> (HH:MM:SS)	<input type="text" value="20"/>
Scheduling Constraints: We request night time observations.			Comments: <input type="text"/>		<input type="button" value="Save"/> <input type="button" value="Cancel"/>

Source Groups	Resources	Time/Session (hrs)	Add
Targets	Q-spec-line	<input type="text" value="2.50"/>	<input type="button" value="Add"/>

Note that this number, and the number of sessions are based on the sensitivity calculations and overhead assumptions. Stay tuned....

# Technical Justification – I

See ‘Guide to Proposing for the VLA’ for an example: [go.nrao.edu/vla-prop](http://go.nrao.edu/vla-prop)

Save Help

## TECHNICAL JUSTIFICATION

« « Technical Justification » »

### VLA Technical Justification

Use this page to specify how the technical set-up requested for your proposal enables the scientific goals to be met. Input is required for all fields. If a field is not relevant for your proposal then enter "NA" into the textbox. The links within each box provide information concerning these technical questions.

Are the data to be combined with those from other configurations or radio telescopes, if so, please specify:

<http://go.nrao.edu/combine>

Explain the reason for the array configuration(s) requested. Include the angular extent of the source and the largest angular size (LAS) to be measured:

<http://go.nrao.edu/vla-res>

Give possible scheduling constraints. Issues that should be addressed:

1. Are targets nighttime/daytime for the configurations proposed (possibly important for low-frequency interference or high frequency phase stability)?
2. What will be the target elevation (possibly important for high-frequency calibration and overhead)?
3. What is the required date for coordinated or fixed-date observations?
4. Are there dates that should be excluded, e.g. for proximity to the Sun?
5. For Large projects, what is the total number of passes required at a given LST?

<http://go.nrao.edu/vla-plan>

If you entered a minimum / maximum LST different from the calculated value for any session, you must justify the values here:

Explain choice of receiver(s) requested:

<http://go.nrao.edu/vla-frq>

Describe the choice of samplers and the correlator set-up(s) requested. For spectral line observations also provide details such as:

- Velocity/frequency span of the line(s).
- Velocity/frequency resolution needed.
- Subband width(s) and channel numbers to be used for each line.
- Rest and sky frequencies of interest.

<http://go.nrao.edu/vla-samplers>

<http://go.nrao.edu/widar>

<http://go.nrao.edu/vla-obsline>

<http://go.nrao.edu/ont-rct>

# Technical Justification – I

[go.nrao.edu/vla-res](http://go.nrao.edu/vla-res)

Configuration	A	B	C	D	A	B	C	D
$B_{\max}$ (km <sup>1</sup> )	36.4	11.1	3.4	1.03	36.4	11.1	3.4	1.03
$B_{\min}$ (km <sup>1</sup> )	0.68	0.21	0.035 <sup>5</sup>	0.035	0.68	0.21	0.035 <sup>5</sup>	0.035
<b>Band</b>	<b>Synthesized Beamwidth <math>\theta_{\text{HPBW}}</math>(arcsec)<sup>1,2,3</sup></b>				<b>Largest Angular Scale <math>\theta_{\text{LAS}}</math>(arcsec)<sup>1,4</sup></b>			
74 MHz (4)	24	80	260	850	800	2200	20000	20000
350 MHz (P)	5.6	18.5	60	200	155	515	4150	4150
1.5 GHz (L)	1.3	4.3	14	46	36	120	970	970
3.0 GHz (S)	0.65	2.1	7.0	23	18	58	490	490
6.0 GHz (C)	0.33	1.0	3.5	12	8.9	29	240	240
10 GHz (X)	0.20	0.60	2.1	7.2	5.3	17	145	145
15 GHz (Ku)	0.13	0.42	1.4	4.6	3.6	12	97	97
22 GHz (K)	0.089	0.28	0.95	3.1	2.4	7.9	66	66
33 GHz (Ka)	0.059	0.19	0.63	2.1	1.6	5.3	44	44
45 GHz (Q)	0.043	0.14	0.47	1.5	1.2	3.9	32	32

# Technical Justification – I

Save Help

## TECHNICAL JUSTIFICATION

« < Technical Justification > »

### VLA Technical Justification

Use this page to specify how the technical set-up requested for your proposal enables the scientific goals to be met. Input is required for all fields. If a field is not relevant for your proposal then enter "NA" into the textbox. The links within each box provide information concerning these technical questions.

Are the data to be combined with those from other configurations or radio telescopes, if so, please specify:

<http://go.nrao.edu/combine>

Explain the reason for the array configuration(s) requested. Include the angular extent of the source and the largest angular size (LAS) to be measured:

<http://go.nrao.edu/vla-res>

Give possible scheduling constraints. Issues that should be addressed:

1. Are targets nighttime/daytime for the configurations proposed (possibly important for low-frequency interference or high frequency phase stability)?
2. What will be the target elevation (possibly important for high-frequency calibration and overhead)?
3. What is the required date for coordinated or fixed-date observations?
4. Are there dates that should be excluded, e.g. for proximity to the Sun?
5. For Large projects, what is the total number of passes required at a given LST?

<http://go.nrao.edu/vla-plan>

If you entered a minimum / maximum LST different from the calculated value for any session, you must justify the values here:

Explain choice of receiver(s) requested:

<http://go.nrao.edu/vla-frq>

Describe the choice of samplers and the correlator set-up(s) requested. For spectral line observations also provide details such as:

- Velocity/frequency span of the line(s).
- Velocity/frequency resolution needed.
- Subband width(s) and channel numbers to be used for each line.
- Rest and sky frequencies of interest.

<http://go.nrao.edu/vla-samplers>

<http://go.nrao.edu/widar>

<http://go.nrao.edu/vla-obsline>

<http://go.nrao.edu/ont-rct>

# Technical Justification – I

- VLA has two separate sampler sets:
  - **Two** 8-bit sampler pairs, each pair covering 1024 MHz
    - **Total of 2048 MHz BW, per polarization**
  - **Four** 3-bit sampler pairs, each pair covering 2048 MHz.
    - **Total of 8192 MHz BW, per polarization**
- 8-bit paths primarily for low frequency bands (P, L, S)
  - 90cm, 20cm, 10cm bands
- 3-bit paths primarily for high frequency bands (C through Q)
  - 5cm, 3cm, 2cm, 1.3cm, 0.9cm, 0.7cm
- But: 3-bit samplers lose  $\sim 15\%$  sensitivity.
  - If your science requires  $< 2$  GHz BW, use the 8-bit samplers.

# Technical Justification - II

Give the sensitivity required to achieve the science goal; include frequency or velocity width assumed:

<http://go.nrao.edu/vla-rms>

Give the required on-source integration time to achieve the required sensitivity, and total time including overhead; include considerations such as source confusion in compact configurations, RFI in the geostationary satellite belt, self-noise for strong sources; if the overhead assumed is different from that given by the exposure calculator, please explain:

Please upload exposure calculator graphic(s). Multiple files should be uploaded if there are multiple resources. Use the "Save" button on the tool to save a pdf file which can then be uploaded using the browse/upload buttons to the right.

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

Note correlator dump time, data rate, and total volume of all raw data expected (not just the on-source fraction); for data rates in excess of 25 MB/s, please provide additional justification for why this data rate is required (for simple experiments, the data rates are calculated for each correlator setup in the GOST tool and for wide-band observations, the PST gives the rate when a Resource is set up):

<http://go.nrao.edu/tim-res>

Use this space to tell the technical reviewer what expected imaging problems you might expect to see, due, e.g. to wide fractional bandwidths, ionosphere, nearby strong sources, complex source structure, etc. Please also let us know how you plan to ameliorate these imaging problems. This might include using particular kinds of software and computing resources, either at NRAO or your home institution. Other information that might be useful to the reviewer are whether the target can be self-calibrated, whether or not the images will be dynamic range limited, etc.

<http://go.nrao.edu/imaging>

For polarimetric observations, note whether the observations require parallactic angle coverage, or whether an unpolarized source will be used to calibrate determine the D-terms:

<http://go.nrao.edu/vla-pol>

Note any potential problems with RFI in the proposed observations. Proximity to the geosynchronous satellite belt in the declination range from about 0 to -10 degrees should be noted.

<http://go.nrao.edu/vla-rfi>

If this is a joint external proposal (e.g., HST, Chandra, or Swift), please add any technical details about the external telescope here:

Note any other special technical considerations with either the setup or the data processing. RSRO proposals should use this section to describe who will fill the residency requirements for the proposal, along with a description of their technical expertise.

<http://go.nrao.edu/vla-oss>

<http://go.nrao.edu/vla-capabilities>

If you entered a minimum / maximum LST different from the calculated value for any session, you must justify the values here:

Browse... No file selected. Upload

File Name	Size		
File Name	Size	delete	download

# VLA Exposure Calculator

[go.nrao.edu/ect](http://go.nrao.edu/ect)

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
Bandwidth (Frequency)	0.0000 GHz
Bandwidth (Velocity)	0.0000 km/s
RMS Noise (units/beam)	100.0000 $\mu$ Jy
RMS Brightness (temp)	0.0000 mK
Confusion Level	0.0Jy
<div>Help Save</div>	

**i Input center frequency**  
You must provide a value for Frequency. Press the <Tab> key afterwards to move to the Bandwidth field.

**i Input bandwidth**  
You must provide a value for Bandwidth. Press the <Tab> key to leave the field and perform the calculation.

# VLA Exposure Calculator

[go.nrao.edu/ect](http://go.nrao.edu/ect)

VLA Exposure Calculator	
Array Configuration	D
Number of Antennas	25
Polarization Setup	<input type="radio"/> Single <input checked="" type="radio"/> Dual
Type of Image Weighting	<input checked="" type="radio"/> Natural <input type="radio"/> Robust
Representative Frequency	33.0000 GHz
Receiver Band	Ka
Approximate Beam Size	3.138"
Digital Samplers	<input checked="" type="radio"/> 3 bit <input type="radio"/> 8 bit
Elevation	Medium (25-50 degrees)
Average Weather	Summer
Calculation Type	<input type="radio"/> Time <input type="radio"/> BW <input checked="" type="radio"/> Noise/Tb
Time on Source (UT)	1h 19m 35s
Total Time (UT)	2h 30m 0s
Bandwidth (Frequency)	8.0000 GHz
Bandwidth (Velocity)	72,676.9595 km/s
RMS Noise (units/beam)	4.8377 $\mu$ Jy
RMS Brightness (temp)	0.5513 mK
Confusion Level	16.665489nJy
<div>Help Save</div>	



## Samplers have been switched to 3-bit

The calculations now reflect the use of the 3-bit digital samplers. Compared to the 8-bit samplers there is about a 15% sensitivity penalty when using the 3-bit samplers.

# VLA Exposure Calculator

[go.nrao.edu/ect](http://go.nrao.edu/ect)

VLA Exposure Calculator	
Array Configuration	<input type="text" value="D"/>
Number of Antennas	<input type="text" value="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	<input type="text" value="44.0695"/> <input type="text" value="GHz"/>
Receiver Band	<input type="text" value="Q"/>
Approximate Beam Size	<input type="text" value="1.567"/>
Digital Samplers	<input type="radio"/> 3 bit <input checked="" type="radio"/> 8 bit
Elevation	<input type="text" value="Medium (25-50 degrees)"/>
Average Weather	<input type="text" value="Summer"/>
Calculation Type	<input type="radio"/> Time <input type="radio"/> BW <input checked="" type="radio"/> Noise/Tb
Time on Source (UT)	<input type="text" value="1h 19m 35s"/>
Total Time (UT)	<input type="text" value="2h 30m 0s"/>
Bandwidth (Frequency)	<input type="text" value="1.9530"/> <input type="text" value="kHz"/>
Bandwidth (Velocity)	<input type="text" value="0.0133"/> <input type="text" value="km/s"/>
RMS Noise (units/beam)	<input type="text" value="17.4057"/> <input type="text" value="mJy"/>
RMS Brightness (temp)	<input type="text" value="4.4633"/> <input type="text" value="K"/>
Confusion Level	<input type="text" value="0.0Jy"/>
<input type="button" value="Help"/> <input type="button" value="Save"/>	

# Go back to “General” and see that the total time is filled in after setting the sessions

Dashboard Proposals Data Processing Obs Prep Helpdesk Profile

Hi, Galactico | Sign Out

Tuesday 04 July 2017

My Proposals Available Authors Available Organizations

Validate Print Submit

**Options**

- My Proposals
  - VLA/2017-06-008
    - General
    - Authors
    - Science Justification
    - Technical Justification
    - Sources
    - Resources
    - Sessions
    - Disposition Letter

**GENERAL**

Observing Proposal

**Status:** DRAFT  
**Create Date:** 07/03/2017  
**Modify Date:** 07/04/2017  
**Submit Date:**  
**Total Time:** 10.0

**Title**  
Discovering the Cosmos

**Type**  
Regular

You may “Validate”, “Print” and “Submit” when you are ready.

# For VLBA Proposals

- Also use the PST
- Many elements are similar to the VLA's
- Will highlight the sections that are significantly different.

Create



○ VLA



○ GBT



● VLBA/HSA



○ GMVA

# VLBA Resources

## VLBA/HSA RESOURCES

« < Resources > »

Order	Name	Wavelength	Processor	Observing Mode	Session
		3.6 cm	Socorro-DiFX	Standard/Shared Risk	

Stations		Observing Parameters		Correlation Parameters		Special Features	
VLBA <input type="checkbox"/>	BR <input type="checkbox"/> FD <input type="checkbox"/> HN <input type="checkbox"/> KP <input type="checkbox"/> LA <input type="checkbox"/> MK <input type="checkbox"/> NL <input type="checkbox"/> OV <input type="checkbox"/> PT <input type="checkbox"/> SC <input type="checkbox"/>	Observing System	DDC System	Number of Correlator Passes	1	Full Polarization	<input type="checkbox"/>
		Bandwidth	128 MHz	Integration Period(sec)	2.0	Pulsar Gate	<input type="checkbox"/>
HSA <input type="checkbox"/>	GBT <input type="checkbox"/> AR <input type="checkbox"/> EB <input type="checkbox"/> VLA-Y27 <input type="checkbox"/>	Baseband Channels	4	Spectral Points/BBC	256	Output Format Conversion to Mark4	<input type="checkbox"/>
VLA	Y1 <input type="checkbox"/>	Polarization	Dual	No. of Phase Centers per Pointing	1		
Geodetic		Agg. Bit Rate (Mbits/sec)	2048				

Save  
Delete  
Cancel

- Similar to VLA you can “Copy Resources” from another project or “Add” a resource.

# VLBA Resources

## VLBA/HSA RESOURCES

Order	Name	Wavelength	Processor	Observing Mode	Session
X		3.6 cm	Socorro-DiFX	Standard/Shared Risk	

Stations		Observing Parameters		Correlation Parameters		Special Features	
VLBA <input checked="" type="checkbox"/>	BR <input checked="" type="checkbox"/> FD <input checked="" type="checkbox"/> HN <input checked="" type="checkbox"/> KP <input checked="" type="checkbox"/> LA <input checked="" type="checkbox"/> MK <input checked="" type="checkbox"/> NL <input checked="" type="checkbox"/> OV <input checked="" type="checkbox"/> PT <input checked="" type="checkbox"/> SC <input checked="" type="checkbox"/>	Observing System	PFB System	Number of Correlator Passes	1	Full Polarization	<input checked="" type="checkbox"/>
		Bandwidth	32 MHz	Integration Period(sec)	2.0	Pulsar Gate	<input type="checkbox"/>
HSA <input checked="" type="checkbox"/>	GBT <input checked="" type="checkbox"/> AR <input type="checkbox"/> EB <input checked="" type="checkbox"/> VLA-Y27 <input checked="" type="checkbox"/>	Baseband Channels	16	Spectral Points/BBC	64	Output Format Conversion to Mark4	<input type="checkbox"/>
VLA	Y1 <input type="checkbox"/>	Polarization	Dual	No. of Phase Centers per Pointing	1		
Geodetic		Agg. Bit Rate (Mbits/sec)	2048				

[Save](#)  
[Delete](#)  
[Cancel](#)

- For VLBA proposals you choose which antennas you want/need.
- In this example, we chose all VLBA antennas + HSA (GBT, Y27, EB) to boost the sensitivity.
- Also chose maximum bandwidth (256MHz or 2048 Mbps)
  - 16 baseband channels with dual polarization means: 8 in RCP + 8 in LCP delivering 256 MHz total per polarization.

# VLBA Technical Justification

## TECHNICAL JUSTIFICATION

« « Technical Justification » »

### VLBA Technical Justification

Use this page to specify how the technical set-up requested for your proposal enables the scientific goals to be met. Input is required for all fields. If a field is not relevant for your proposal then enter "NA" into the textbox. The links within each box provide information concerning these technical questions.

Explain the reasons for the stations requested; specify minimum number acceptable, and note which stations are optional and/or required. If HSA observations are being requested, justify why the HSA is needed to achieve the science, and verify that all stations can sample/record with the same observing mode.

<https://science.lbo.us/facilities/viba/docs/manuals/oss/ang-res>  
<https://science.lbo.us/facilities/viba/docs/manuals/oss/viba-plus>

Explain the choice of receiver(s) requested and whether or not dual polarization is required for each receiver:

<https://science.lbo.us/facilities/viba/docs/manuals/oss/bands-perf>

Explain scheduling issues including requested weather conditions, dates, and length of scheduling blocks. Specify the weather suitable for a given frequency band. For example - 'I request weather suitable for the 2cm band'. Note that this is not necessarily the observing frequency (since one may request lower or higher frequency weather). Specify preferred dates, or excluded dates, and/or if a series of observations with specified cadence, specify that cadence. Specify minimum length of scheduling blocks (blocks of observing time, which may be different than sessions) that can be observed and a start-time range in Pt\_LST; note that shorter blocks are, in general, easier to schedule; if 24-hour blocks are required, indicate whether or not break-points may be installed in the schedule to allow different start times.

Describe correlator set-up requested. Correlation parameters beyond those required for narrow-field continuum or spectral line observing should be justified. For example, use of pulsar processing, multiple phase centers, multiple correlator passes or wide-field phase centers should be explained. These capabilities, used in isolation or in combination, may have an impact on correlator throughput. Also justify the number of multiple phase centers if > 100.

<https://science.lbo.us/facilities/viba/docs/manuals/oss/correlator>

Note whether the target(s) can be self-calibrated and estimate their flux density. If phase-referencing is required, specify the phase-reference calibrators to be used and their expected flux densities, or whether extra time (on the VLBA or VLA) will be required to find calibrators:

<https://science.lbo.us/facilities/viba/docs/manuals/oss/bsin-sens>  
<https://www.lbo.us/viba/astro/calib>

Sensitivity required to achieve the science goal. Include frequency or velocity width assumed, for non-imaging experiments, justify the baseline sensitivity:

Required on-source integration time to achieve the required sensitivity, and total time including overhead; include considerations such as uv-coverage needed for precision imaging, recording rate, etc., and assume the minimum acceptable number of stations in calculating the required integration time; please also verify that the time request on the cover page is consistent with that specified here:

Please upload EVN exposure calculator graphic(s), if it was used to calculate the integration time needed. Please make sure that all 4 subpanels of the calculator are captured. Multiple files should be uploaded if there are multiple resources. Use your favorite utility (e.g., xv or gimp [linux]; grab or Command+Shift+4 [Mac]) to make a png file of the EVN exposure calculator graphic which can then be uploaded using the browse/upload buttons to the right.

<http://www.evbi.org/cgi-bin/EVNcalc.pl>

<https://science.lbo.us/facilities/viba/docs/manuals/oss/bsin-sens>

<https://science.lbo.us/facilities/viba/docs/manuals/oss/bands-perf>

Browse...	No file selected.	Upload
File Name	Size	
File Name	Size	delete download

# EVN Sensitivity Calculator [www.evlbi.org/cgi-bin/EVNcalc](http://www.evlbi.org/cgi-bin/EVNcalc)

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"/> Nl <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		The image thermal noise is estimated to be 2.564 uJy/beam (1 sigma) using natural weighting.	
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	
The field of view limited by bandwidth-smearing is 8.25 arcseconds (assuming 12000.0 km for the maximum baseline).  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.		The resulting FITS file size will be about 4.62 GBytes.  This combination of channels and polarizations results in an aggregate bit rate of 2048 Mbps, assuming 2 bit sampling.	
		RESET   GO	

# EVN Sensitivity Calculator [www.evlbi.org/cgi-bin/EVNcalc](http://www.evlbi.org/cgi-bin/EVNcalc)

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"/> Nl <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 <math>\mu</math>Jy/beam (1 sigma) using natural weighting.</p>

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 # of channels.
- E.g.  $\sigma = 2.564 \mu\text{Jy/beam}$  for 256MHz, so for 125 kHz channels (i.e., 2048 channels):

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

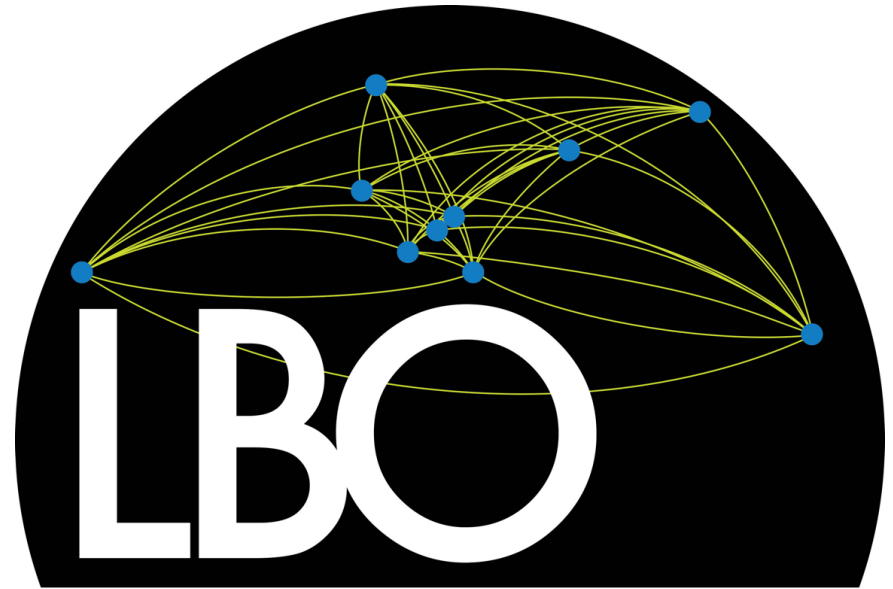
# Some final notes:

- The next VLA/VLBA/GBT proposal deadline is August 1<sup>st</sup>.
- If you have never proposed before please start early so there is time to get help from the NRAO helpdesk ([help.nrao.edu](http://help.nrao.edu)).
- The next deadline is for A and B configurations of the VLA.
- The VLA and VLBA Call for Proposals are at:
  - VLA: <https://science.nrao.edu/observing/call-for-proposals/>
  - VLBA: <https://science.lbo.us/observing/call-for-proposals/>
- The VLA and VLBA Observational Status Summaries are at:
  - VLA: [go.nrao.edu/vla-oss](http://go.nrao.edu/vla-oss)
  - VLBA: [go.nrao.edu/vlba-oss](http://go.nrao.edu/vlba-oss)



[www.nrao.edu](http://www.nrao.edu)  
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