VLA and VLBA Proposal Preparation

Justin Linford

Proposal Process

- First, develop the rationale for the project
  - Science goals, targets, frequency band(s), feasibility, etc.
- Second, create proposal on the NRAO Proposal Submission Tool (PST)
  - Create an NRAO user account
  - Log in to my.nrao.edu and click on the Proposals tab
  - Fill out the forms and upload the required documents
- Third, review and submit the proposal
  - Validate the proposal
  - Click "submit"
- Finally, take a deep breath and go get your favorite tasty beverage

What Makes a Good Proposal?

Scientific Justification

- One Central Question
  - Can be a very broad question:
    - How big is the Milky Way?
    - How old is the Universe?
  - Or more focused:
    - What is this weird source discovered at another wavelength?
- Scientific Context and Motivation
  - Why is this interesting?
  - How does it relate to other areas of astrophysics?
- Science Goals
  - How will the proposed observations answer the question?
  - How will the results benefit other areas of research?

Proposal Tips

A few recommendations

- Start working on your proposal early!
  - DO NOT start your proposal the day before the deadline*
- Review the Call for Proposals carefully
  - Pay close attention to the deadline (including the time!)
- Look over the "Offered Capabilities" section of the OSS
  - VLA: go.nrao.edu/vla-capabilities
  - VLBA: go.nrao.edu/vlba-capabilities
- Try filling out the Technical Justification section first
  - If you can put something in the TJ, that gives you more room in your Science Justification
- Submit your proposal AT LEAST 2 hours before the deadline
  - Things go wrong sometimes. It helps to have a buffer.

*You have already decided to ignore this advice, haven't you?

Creating NRAO/GBO proposals

- Proposal Submission Tool (PST)
  - VLA, VLBA (including HSA & GMVA), GBT, but …
    - for ALMA, use the ALMA Observing Tool (OT)
    - for Global-VLBI, use the EVN NorthStar Tool
- 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

Creating an NRAO/GBO proposal

Register and login at my.nrao.edu

my.nrao.edu

- 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
  - NRAO Helpdesk
    - NOTE: We just switched to a new Helpdesk system

my.nrao.edu Dashboard

National Radio Astronomy Observatory

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

Hi, Justin | Sign Out

Friday 11 December 2020

Help

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).

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 metadata and data of observed projects.

Telescope News

Next Proposal Deadline: February 01, 2021 5 PM EST (22 hours UT) in 52 days

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

Important Information for VLA/GBT/VLBA/HSA/VLBI Proposers

VLA Configuration Plans and Proposal Deadlines

The next proposal deadline

Proposal Help Desk

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

Timeline: Proposal Deadlines

- Two per year: Typically February 1 and August 1
  - If the deadline would fall on a Saturday or Sunday, it is postponed to the following Monday.
  - go.nrao.edu/vla-plan
- Next deadline: February 1st for 2021B (i.e., second half of 2021).
- The VLA configurations in 2021B are
  - B (2nd most extended, B_{max}=11.1 km), and
  - BnA (reserved for VLASS observations)
- Note: Director's Discretionary Time proposals are not subject to these deadlines (more on this later).

Proposal Deadlines and VLA Configurations

go.nrao.edu/vla-plan

VLA configuration schedule and related proposal deadlines

NOTE: Proposal deadlines also apply to VLBA (& GBT)

Semester	Observing Period	Configuration	Proposal Deadline
--	2023 Jun 02 - 2023 Jun 19	BnA†	--
2023A	2023 Jan 18 - 2023 May 29	B	2022 Aug 03
2022B	2022 Oct 06 - 2022 Jan 02*	C	2022 Feb 01
2022A	2022 Jun 01 - 2022 Sep 26*	D	2021 Aug 02
2022A	2022 Mar 04 - 2022 May 13*	A	2021 Aug 02
--	2022 Feb 04 - 2022 Feb 21*	BnA†	--
2021B	2021 Sep 22 - 2022 Jan 31*	B	2021 Feb 01
2021A	2021 Jun 10 - 2021 Sep 06*	C	2020 Aug 03
2021A	2021 Mar 19 - 2021 May 31*	D	2020 Aug 03
2020B	2020 Dec 7 - 2021 Mar 01*	A	2020 Feb 03
--	2020 Oct 23 - 2020 Nov 09	BnA†	--
2020A	2020 Jun 24 - 2020 Oct 19*	B	2019 Aug 01
2020A	2020 Feb 06 - 2020 Jun 08	C	2019 Aug 01
2019B	2019 Nov 08 - 2020 Jan 27	D	2019 Feb 01
2019A	2019 Aug 02 - 2019 Oct 21	A	2018 Aug 01
--	2019 Jul 05 - 2019 Jul 22	BnA†	--
2019A	2019 Feb 20 - 2019 Jul 01	B	2018 Aug 01
2018B	2018 Nov 19 - 2019 Feb 04	C	2018 Feb 01
2018A	2018 Aug 31 - 2018 Nov 13	D	2017 Aug 01
2018A	2018 Mar 02 - 2018 Jun 11	A	2017 Aug 01
--	2018 Feb 02 - 2018 Feb 19	BnA†	--
2017B	2017 Sep 13 - 2018 Jan 29	B	2017 Feb 01
2017A	2017 May 25 - 2017 Aug 28	C	2016 Aug 01
2017A	2017 Feb 10 - 2017 May 15	D	2016 Aug 01
2016B	2016 Sep 23 - 2017 Jan 23	A	2016 Feb 01
2016A	2016 May 27 - 2016 Sep 05	B	2015 Aug 03
2016A	2016 Apr 29 - 2016 May 16	CnB	2015 Aug 03
2016A	2016 Feb 05 - 2016 Apr 25	C	2015 Aug 03
2015B	2016 Jan 08 - 2016 Jan 25	DnC	2015 Feb 02
2015B	2015 Oct 13 - 2016 Jan 04	D	2015 Feb 02

* - dates preliminary

† - BnA configuration reserved exclusively for VLA Sky Survey

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

This helpful table is at the bottom of the page

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
    - 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"

National Radio Astronomy Observatory

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Hi, Galactico | Sign Out

Monday 03 July 2017

Help

Options

- Dashboard
  - News & General Information
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    - 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

Proposal Help Desk

Click on "New Proposal"

National Radio Astronomy Observatory

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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

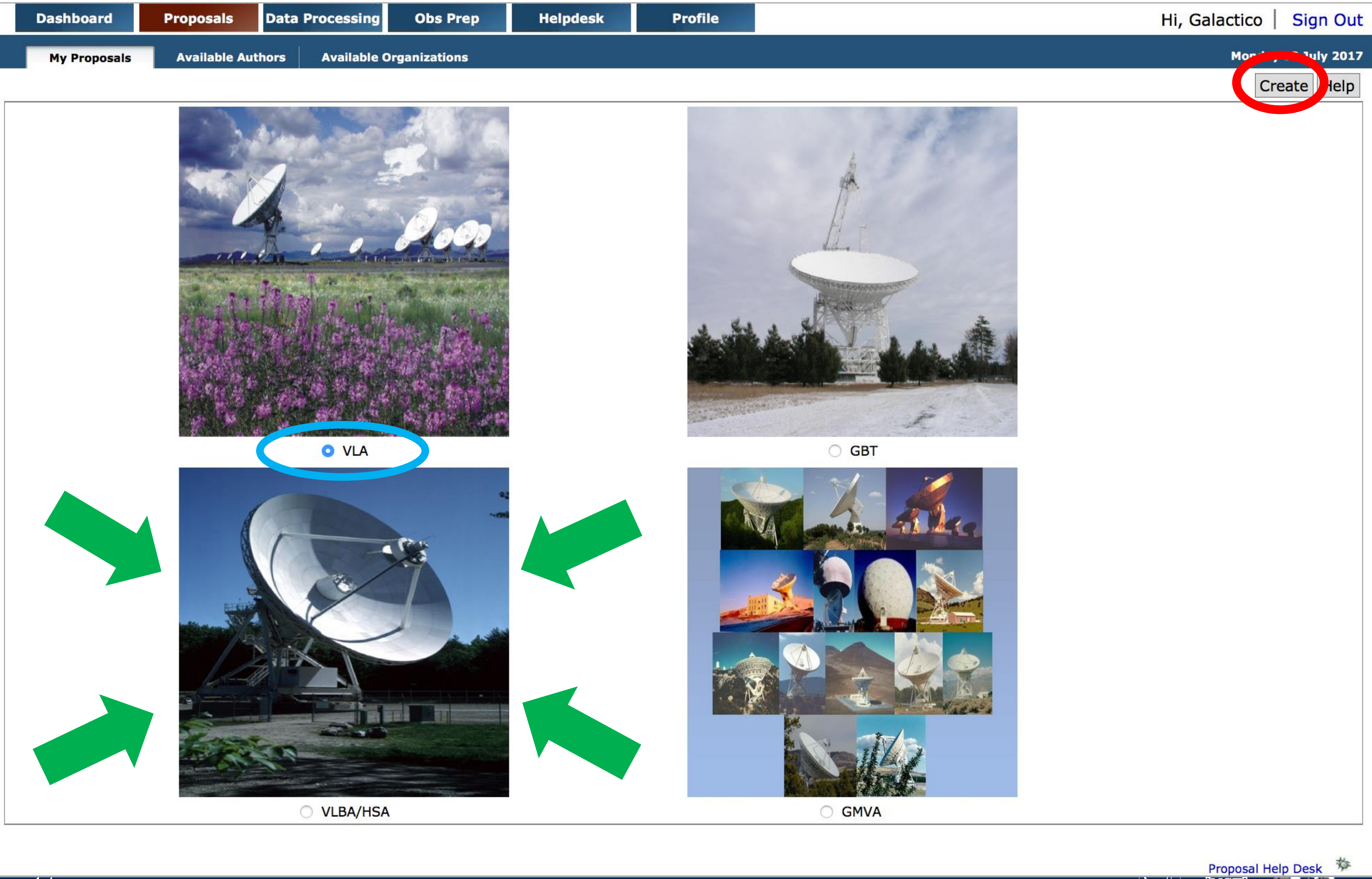
Year: ALL

Proposal	Legacy ID	Title	P.I. Name	Created	Submitted	Status
VLBA/2017-06-001		Resolving the nucear power source in z~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

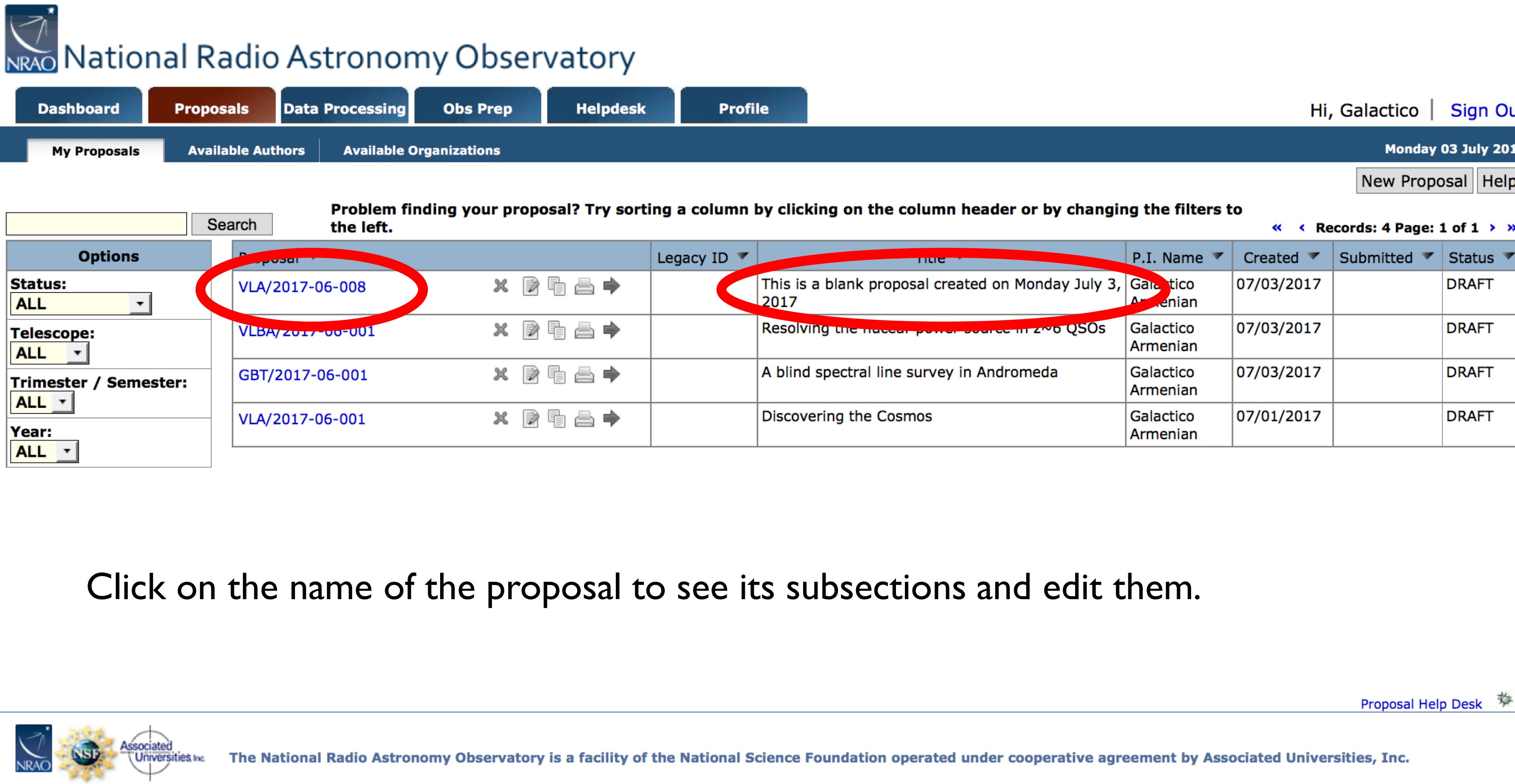
Proposal Help Desk

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

Select type of proposal and then "Create"

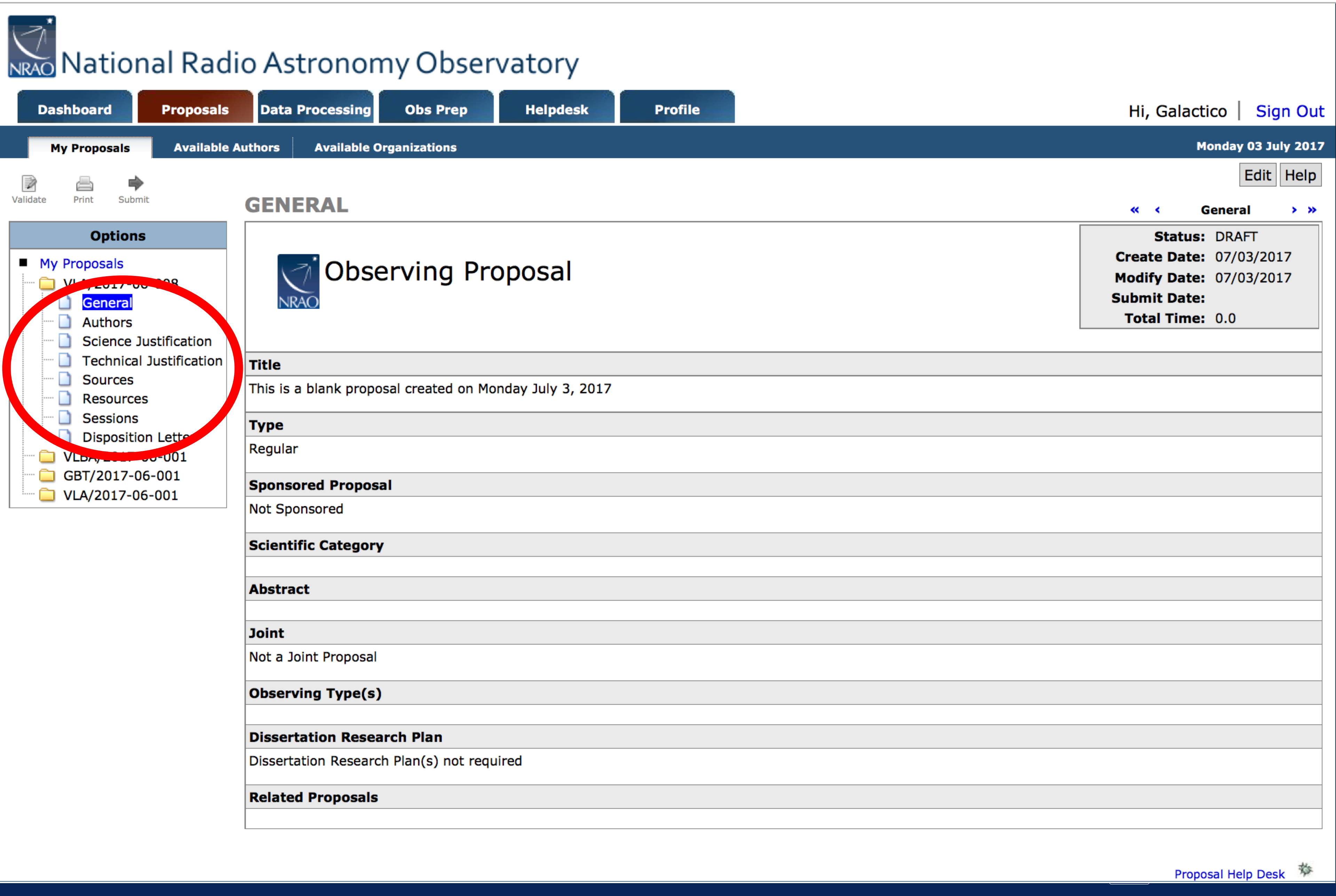


“Blank” proposal now appears in “My Proposals”



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

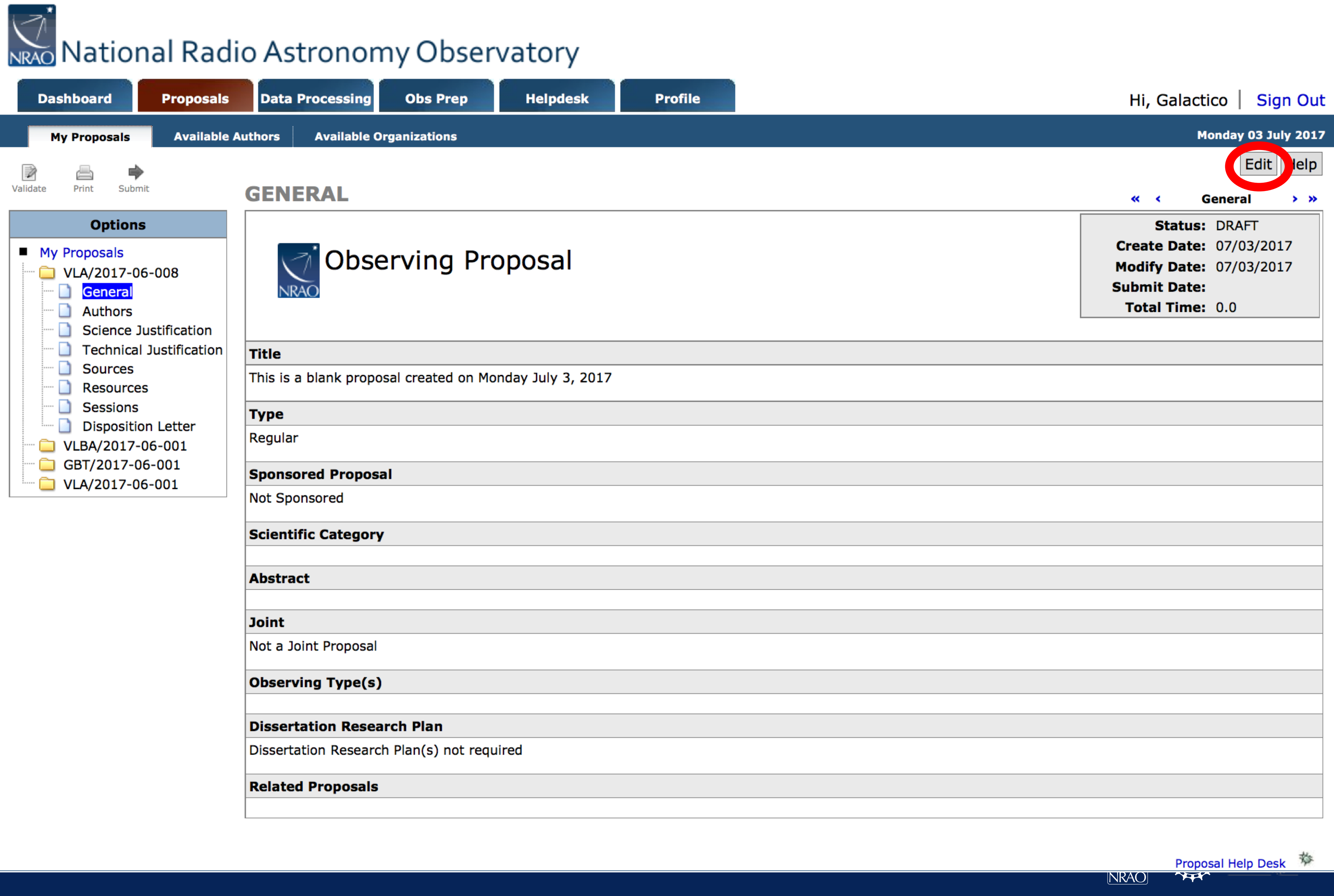
General information



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"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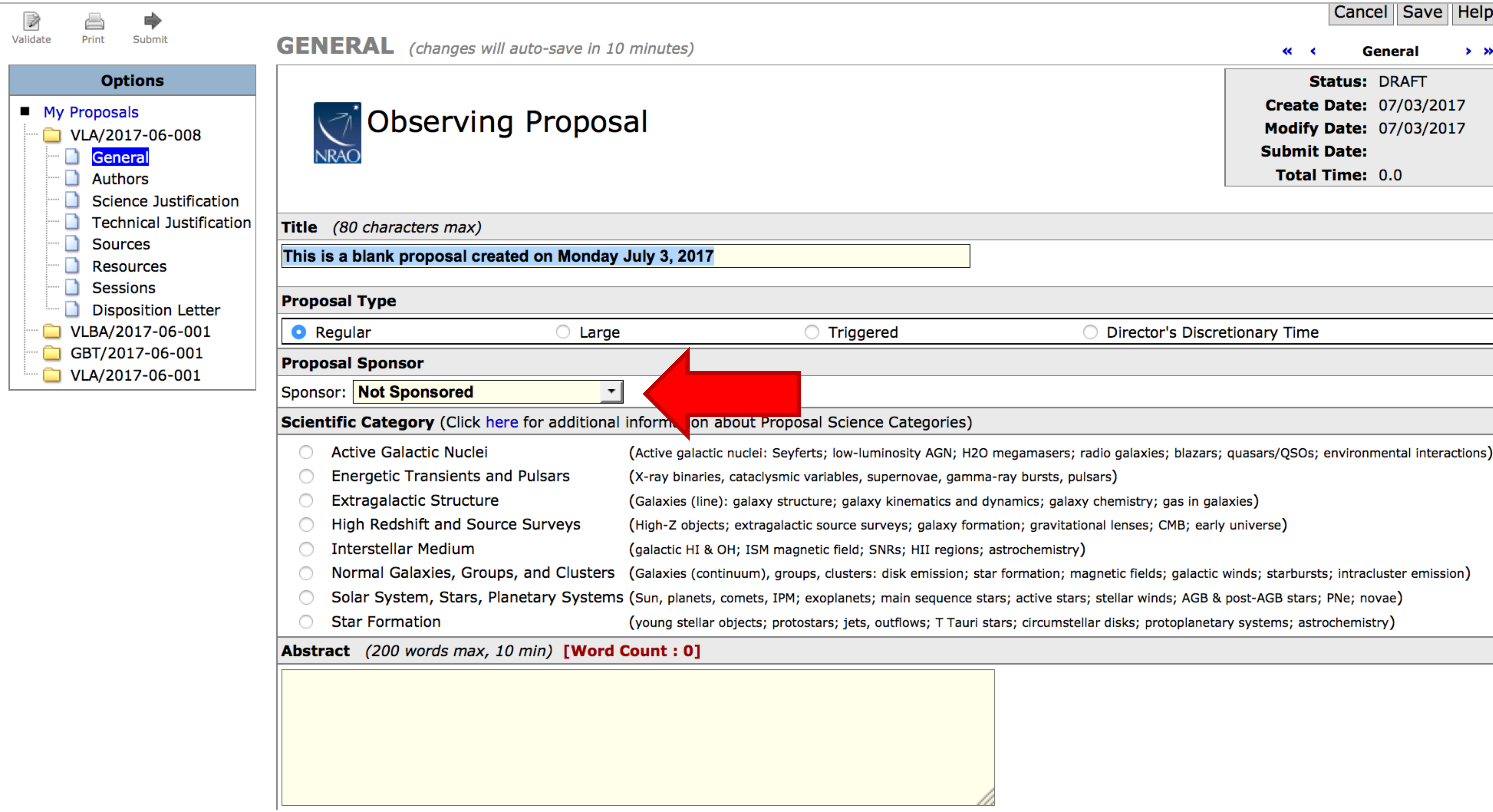
Available Authors
Available Organizations
Monday 03 July 2017
Edit
Help
Validate
Print
Submit
GENERAL
General
Options
My Proposals
VLA/2017-06-008
General
Authors
Science Justification
Technical Justification
Sources
Resources
Sessions
Disposition Letter
VLBA/2017-06-001
GBT/2017-06-001
VLA/2017-06-001
Observing Proposal
Status: DRAFT
Create Date: 07/03/2017
Modify Date: 07/03/2017
Submit Date:
Total Time: 0.0
Title
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

General section - VLA



General section - VLA

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

Observing Type(s)

- [ ] Continuum
- [ ] Spectroscopy
- [ ] Polarimetry
- [ ] Single Pointing(s)
- [ ] Grid Mapping/Mosaicing
- [ ] OTF Mapping
- [ ] Sun
- [ ] Monitoring
- [ ] Solar System
- [ ] High Time Resolution
- [ ] Pulsar
- [ ] Radar
- [ ] Geodesy
- [ ] Astrometry
- [ ] VLA Subarrays
- [ ] 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 Information - VLBA

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

Joint

If you are submitting a joint proposal please see the instructions here.

- ☐ GBT
- ☐ VLA
- ☐ HST — Orbits Requested: 1
- ☐ Swift — Ksec.: 0
- ☐ Chandra — Ksec.: 0
- ☐ XMM-Newton — Ksec.: 5

Observing Type(s)

☐ Continuum	☐ Spectroscopy	☐ Polarimetry
☐ Single Pointing(s)	☐ Grid Mapping/Mosaicing	☐ OTF Mapping
☐ Sun	☐ Monitoring	☐ Solar System
☐ High Time Resolution	☐ Pulsar	☐ Radar
☐ Geodesy	☐ Astrometry	☐ VLA Subarrays
☐ 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".

Request for Extra NRAO Staff Help with VLBA Observation Setup and Data Reduction

☐ Yes, please! Explain why extra help would be beneficial (**200 character maximum**):

New section to request assistance from VLBA staff!

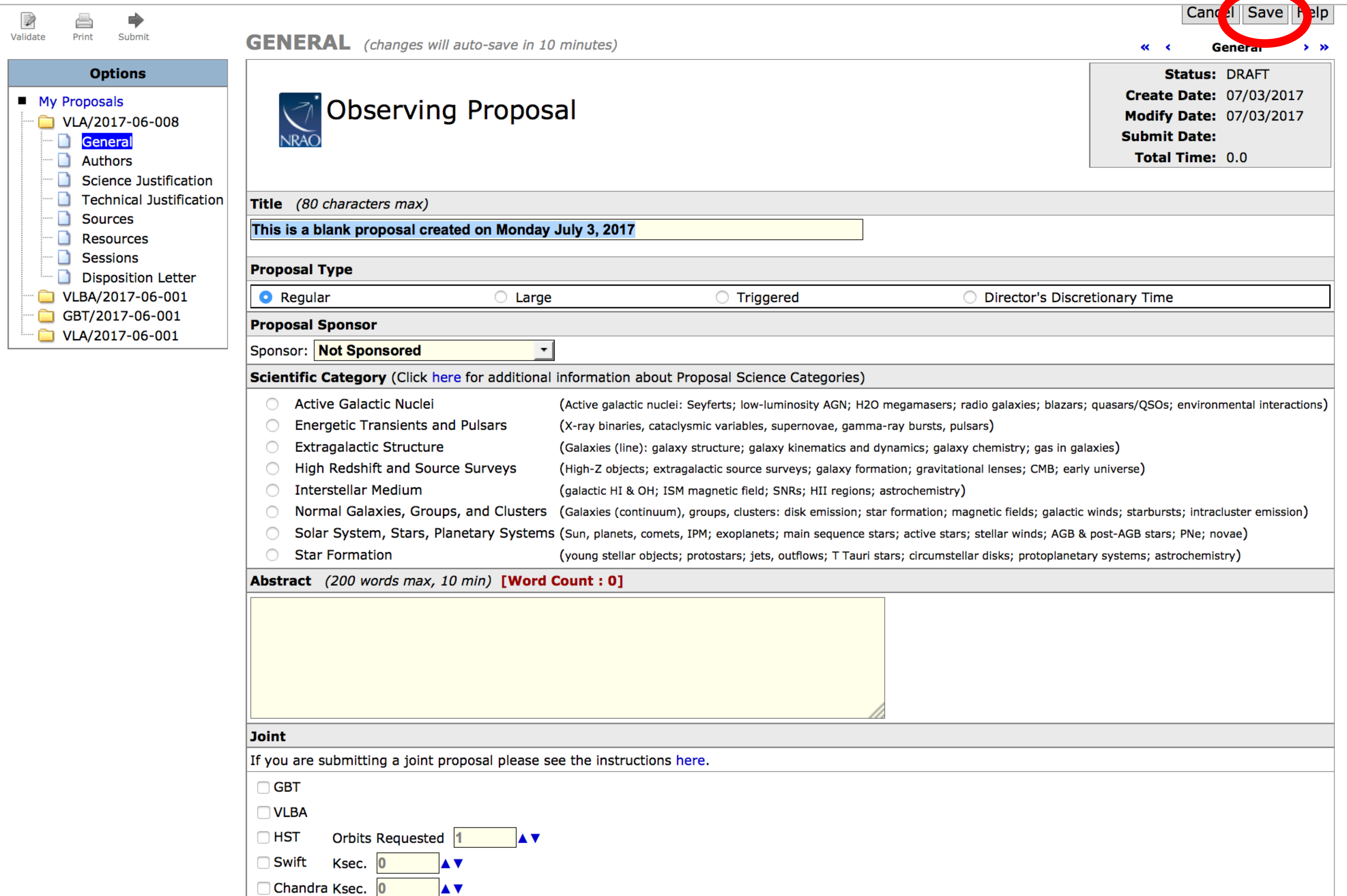
Related Proposals

Extra Help from VLBA Staff

- Includes assistance with observational setups (schedules) and data reduction (calibration, imaging)
- Service is meant for new or novice users
- Not available for HSA, GMVA, or Global cm VLBI projects
- Proposers must justify their need for assistance
- Checking the box and entering a justification does not guarantee assistance will be provided
- The proposal disposition letter will inform proposers if NRAO will provide the requested assistance

NOTE: All users *always* have access to help from NRAO staff via the Helpdesk! This program offers *extra* help.

General section



Validate Print Submit

Cancel Save Help

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

NRAO 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]**

Joint

If you are submitting a joint proposal please see the instructions here.

GBT

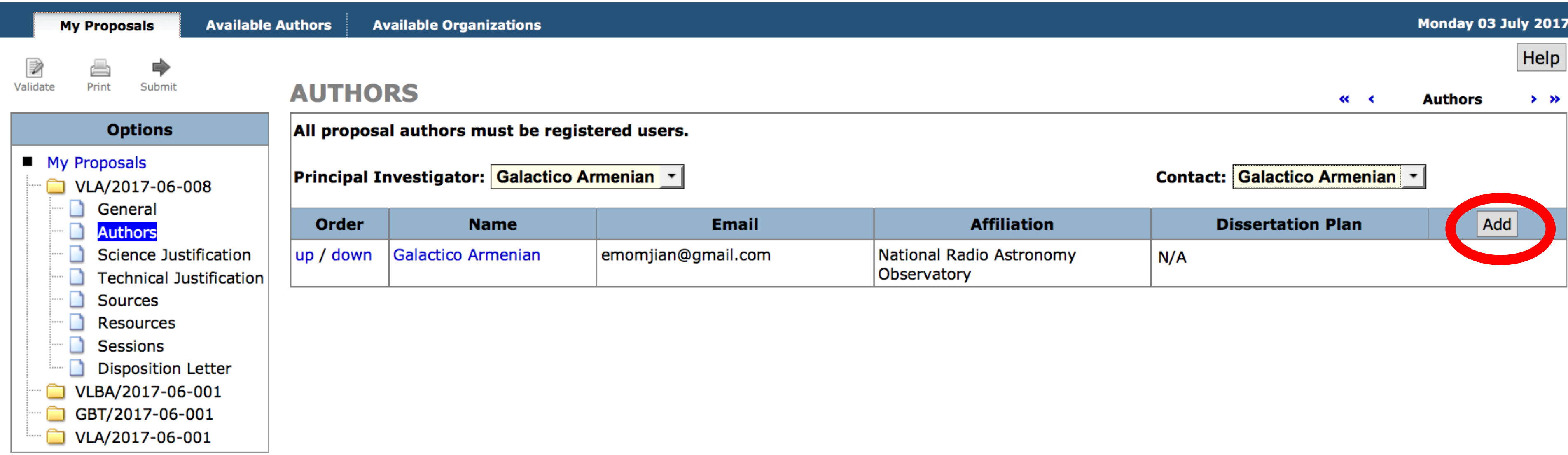
VLBA

HST Orbits Requested 1

Swift Ksec. 0

Chandra Ksec. 0

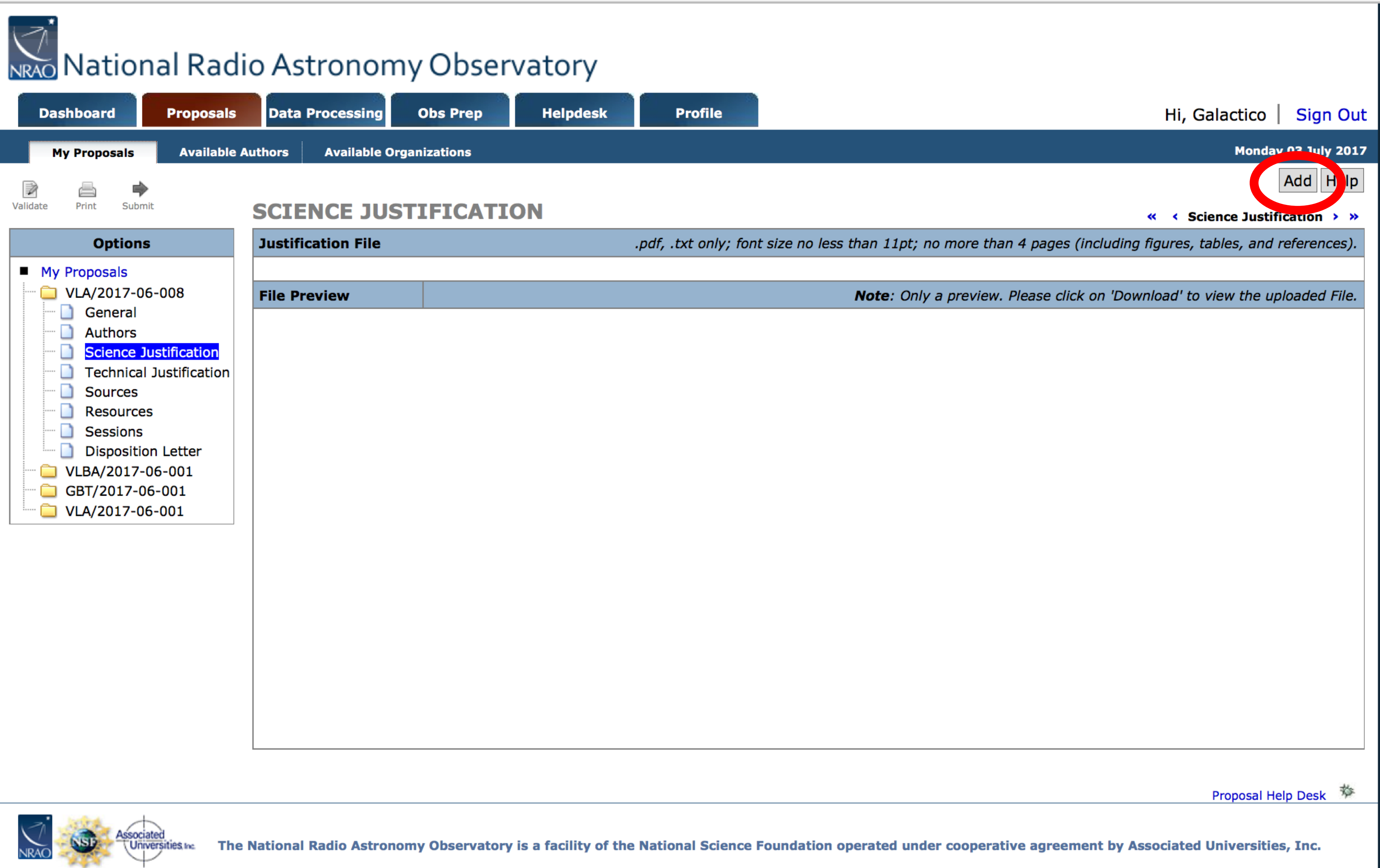
Authors Section



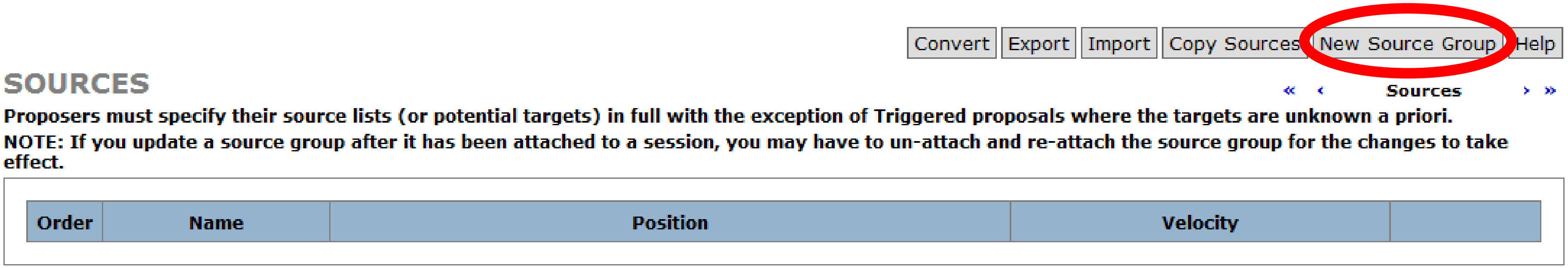
- Will automatically have you as PI and Contact author.
- Add authors with Add button
  - Co-authors need to be in the my.nrao.edu database.
- Move authors up and down on list by using up/down
- Can reassign PI and Contact author

Scientific Justification Section

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

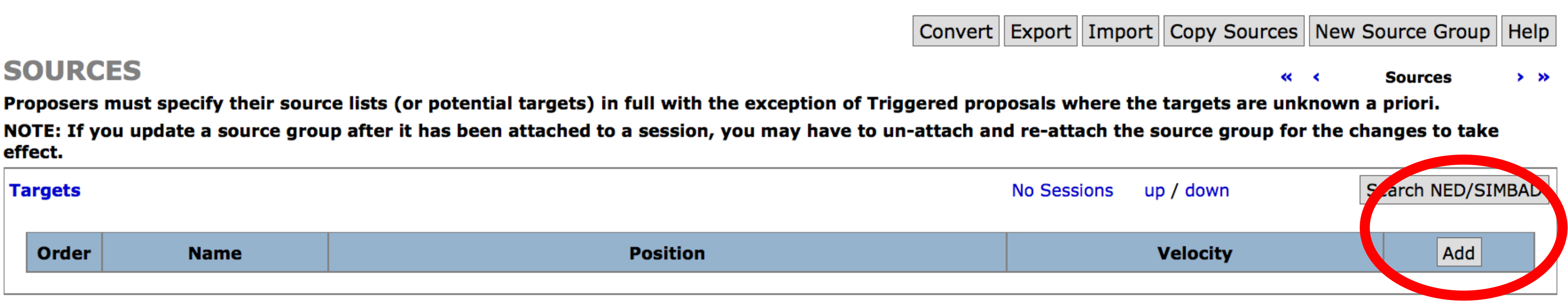


Sources Section



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

Targets No Sessions up / down [Search NED/SIMBAD]

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

Resources Section

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

Resources Section - VLA

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		

Basebands: 2 x 1 GHz(8-bit) / 2 x 2 GHz(3-bit)

Total Bandwidth (GHz): 2.0

Baseband Centers (GHz): 5.5, 6.5

Polarization Products: Full (2.0 MHz / ch)

Dump Time (s): 5.0

Data Rate: 2.4 MB/s, 8.5 GB/h

Save
Delete
Cancel

Resources Section – VLA Continuum

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

Cancel

Resources Section – VLA Spectral Line

Adding a resource for spectral-line science:

VLA RESOURCES

« ‹ **Resources** › »

Order	Name	Configuration	Receiver	Back End	Session	
	Q-spec-line	D	Q Band 0.7 cm 40000 - 50000 M	General and Shared Risk Observing - Spectral Lin		Save Delete Cancel

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:	44.069488 GHz
GOST Screen Shot:	Browse... **No file selected.**

Order	Name	Configuration	Receiver	Back End	Session
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

Starting GOST

GOST should only be used to define configurations for *Standard* and *Shared risk* observing in non-default continuum and spectral line mode for observations above 1 GHz. Plain *Continuum* can be selected as a default mode in the PST; *Resident shared risk* configurations must be described in text in the proposal. A special case is P-band spectroscopy for which we require a screen shot of the validation page of the Resource as defined in the RCT/OPT.

To run GOST, a current version of Java webStart needs to be available on the host computer. The Java issues page has solutions for potential problems. The interactive GOST Java application can be launched (left click, you might need to do a "javaws -clearcache" in a terminal to get the latest version) or, alternatively, downloaded (right click) as a jnlp-file and selecting `Save link as..`. In the latter case, GOST can be run without an Internet connection from the command line with `javaws <downloadDirectory>/latestGOST.jnlp`; this has the disadvantage that an older version of GOST may run if it has not been replaced by the newer version. Usually this is not a problem if the jnlp-file is downloaded just before running it.

This is the default view of GOST when first launched (click the images to enlarge in a new tab or window).

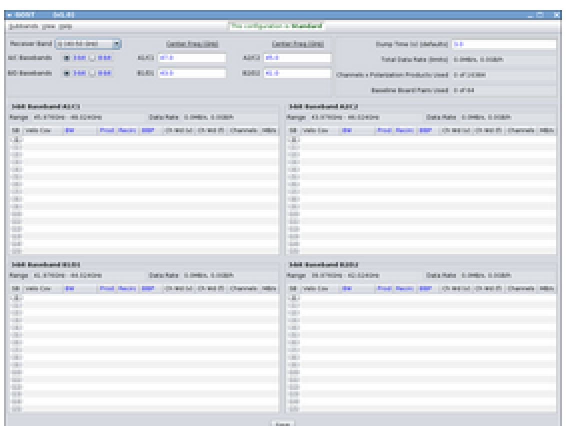
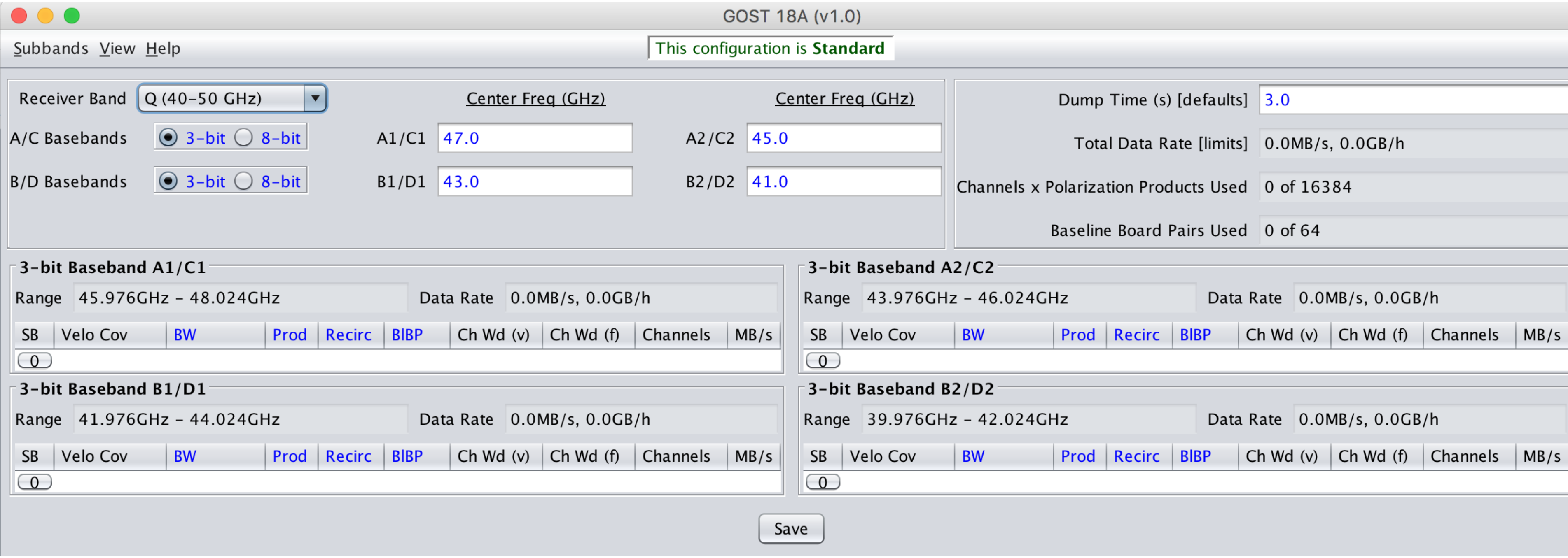


Figure 4.1.1: At the top left hand side there is an option menu (`Subbands, View` and `Help`) (see figure left), but more importantly there is a **configuration designation** in colored font in the top center field (see figure above). At the bottom a `Save` button will save a screen shot to disk which then should be attached to the proposal in the PST (see figure below). Fields shown in blue font are editable and thus under control of the proposer; fonts in black are derived from the selections made.

GOST (General Observing Setup Tool)

go.nrao.edu/gost



- click Subbands → Template… then adjust subband size, polarizations desired, recirculation and baseband pair stacking (BlBP) – recirculation and BlBP can be used to increase spectral resolution
- click Subbands → Fill 16 Subbands (or Fill 32 Subbands for 8 bit) → All A/C (or All B/D…)

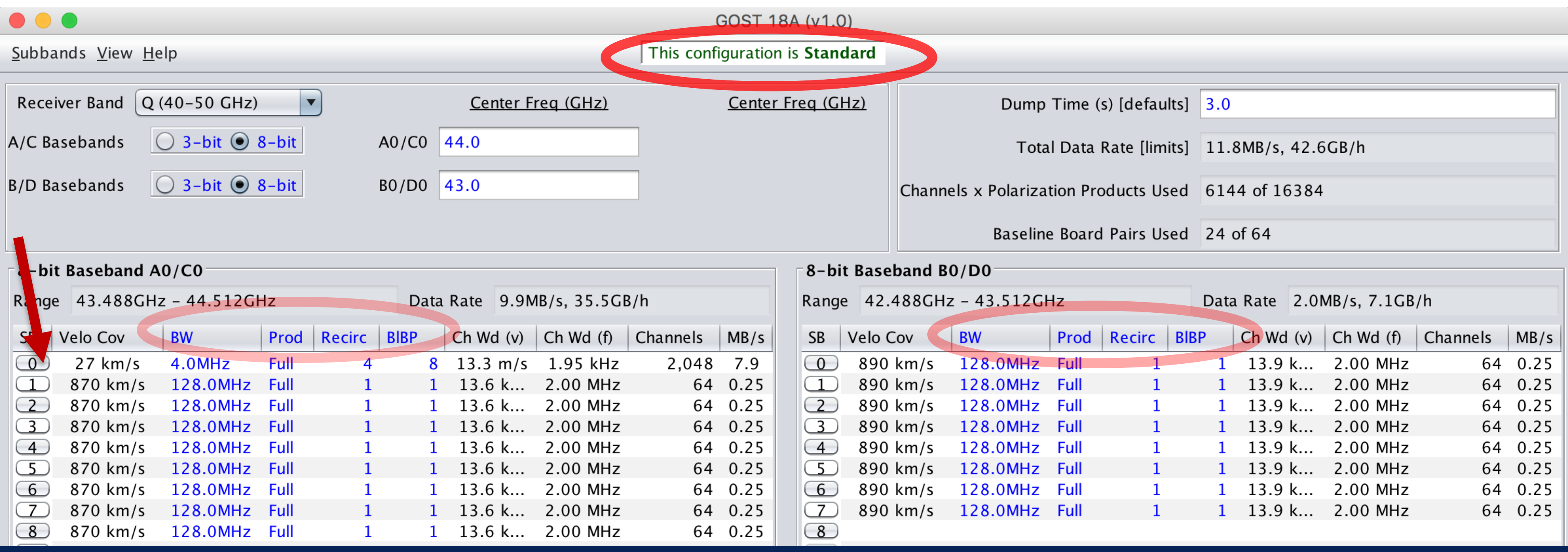
- Refer to GOST section of "VLA Proposing Guide" at go.nrao.edu/vla-prop, especially "GOST Usage Hints"

GOST (General Observing Setup Tool)

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 BlBP)
- 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



Resources Section - VLA

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)

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

8-bit Baseband A0/C0

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

SB	Velo Cov	BW	Prod	Recirc	BlBP	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

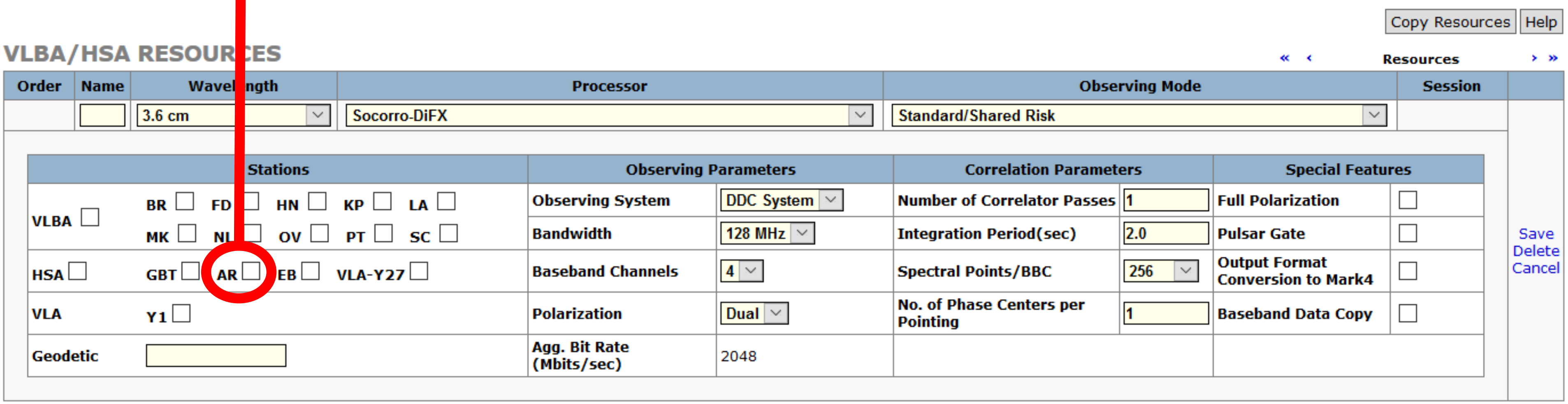
Range: 42.488GHz - 43.512GHz — Data Rate: 2.0MB/s, 7.1GB/h

SB	Velo Cov	BW	Prod	Recirc	BlBP	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									

Edit

Resources Section - VLBA

NOTE: Arecibo is no longer available for HSA observations


Copy Resources | Help

VLBA/HSA RESOURCES

« ‹ Resources › »

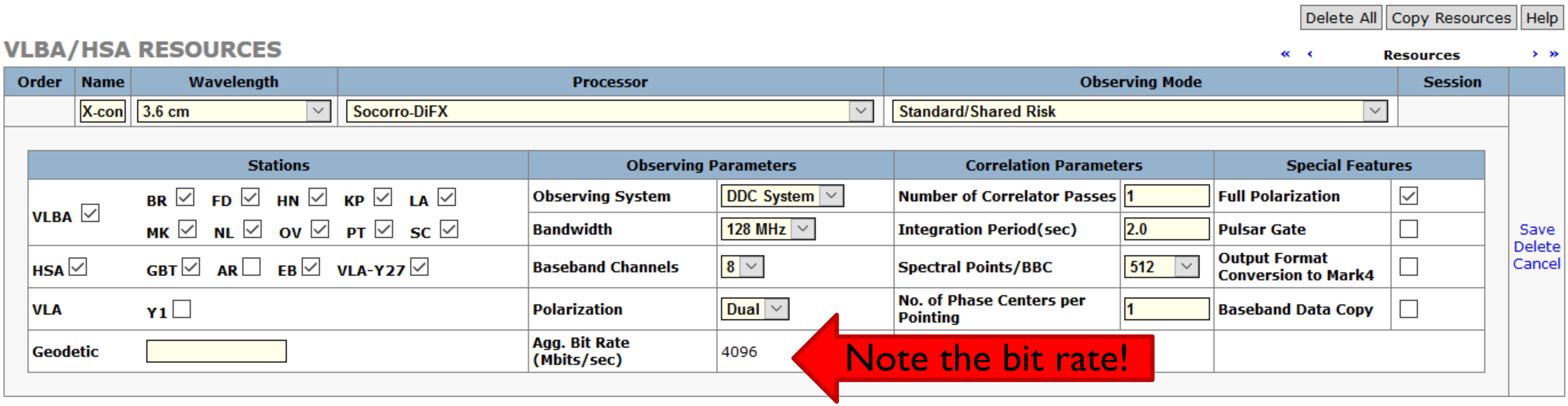
Order	Name	Wavelength	Processor	Observing Mode	Session
		3.6 cm	Socorro-DiFX	Standard/Shared Risk	

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

Save
Delete
Cancel

- You can "Copy Resources" from another project or "Add" a resource.
- NRAO strongly encourages VLBA observers to use the DDC Observing System!

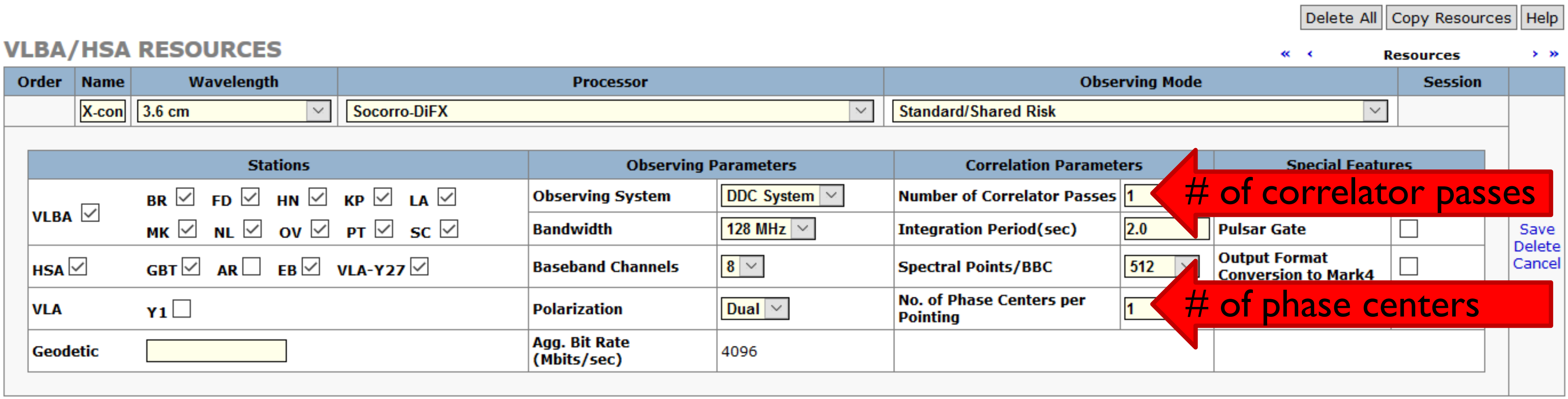
Resources Section - VLBA



- 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 choose the data channel bandwidth
  - The PST will calculate the bit rate
  - 8 data channels with dual polarization means: 4 in RCP + 4 in LCP delivering 512 MHz total per polarization.

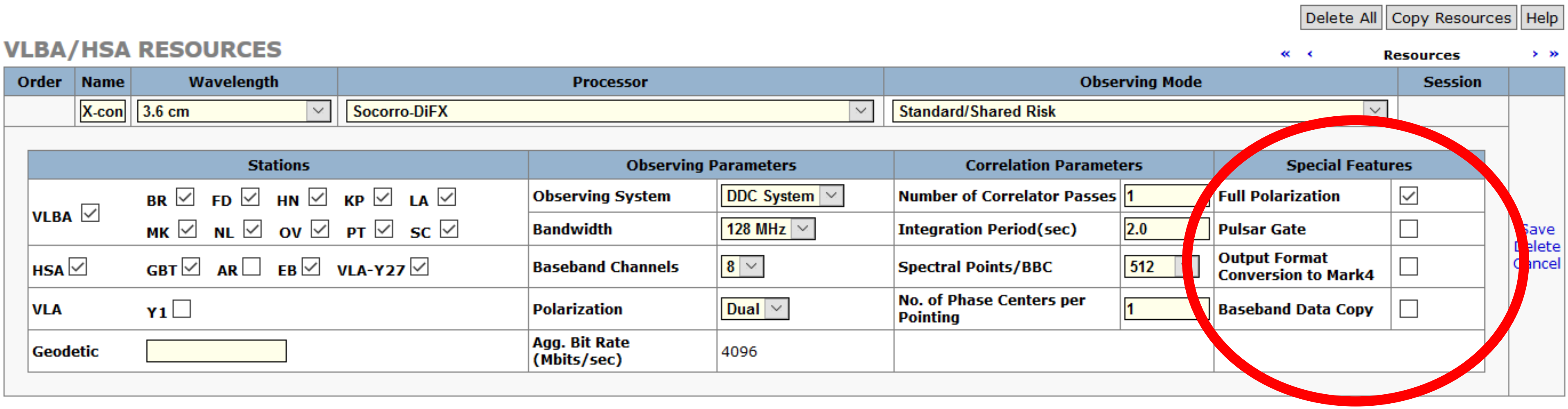
NOTE: The new term for “baseband channels” is “data channels”

Resources Section - VLBA



- You must specify the number of passes through the DiFX correlator
- You must specify the number of phase centers for each pointing
  - The default for each of these is one

Resources Section - VLBA



- Other special considerations
  - Full polarization – determine crosshand polarizations (RL, LR) in correlation
  - Pulsar Gate – binary gating, matched-filter gating, or pulsar binning

VLBA Resources

- After you have created all the resources necessary for your project, you will see a list like this:

Delete All | Copy Resources | Help

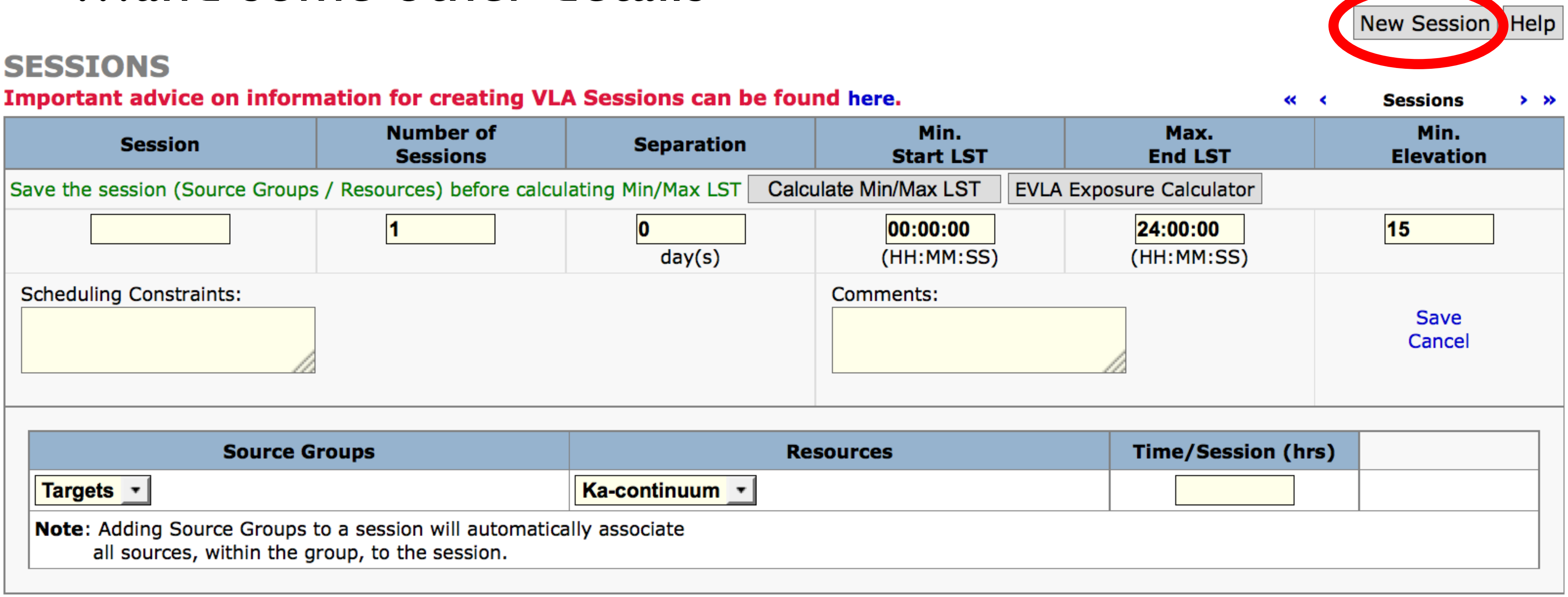
VLBA/HSA RESOURCES

« ‹ Resources › »

Order	Name	Wavelength	Processor	Observing Mode	Session Add
up / down	X-continuum Shared Risk	3.6 cm	Socorro-DiFX	Standard/Shared Risk	No Sessions
up / down	C-continuum	6 cm	Socorro-DiFX	Standard/Shared Risk	No Sessions

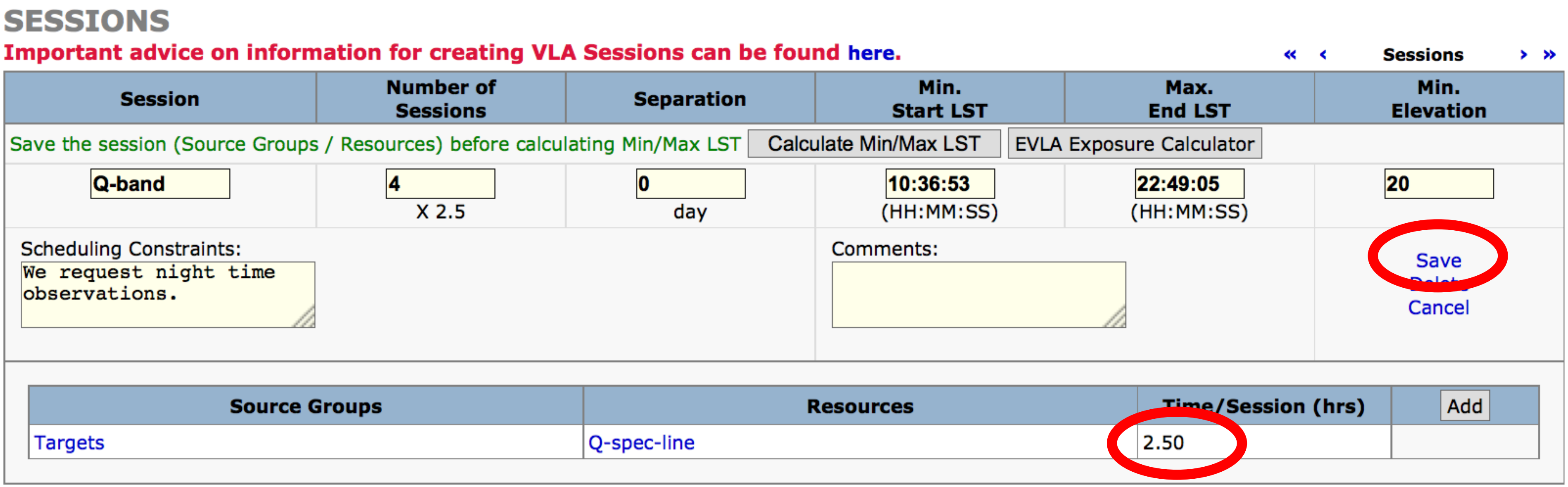
Sessions – connecting the Sources and Resources

…and some other details



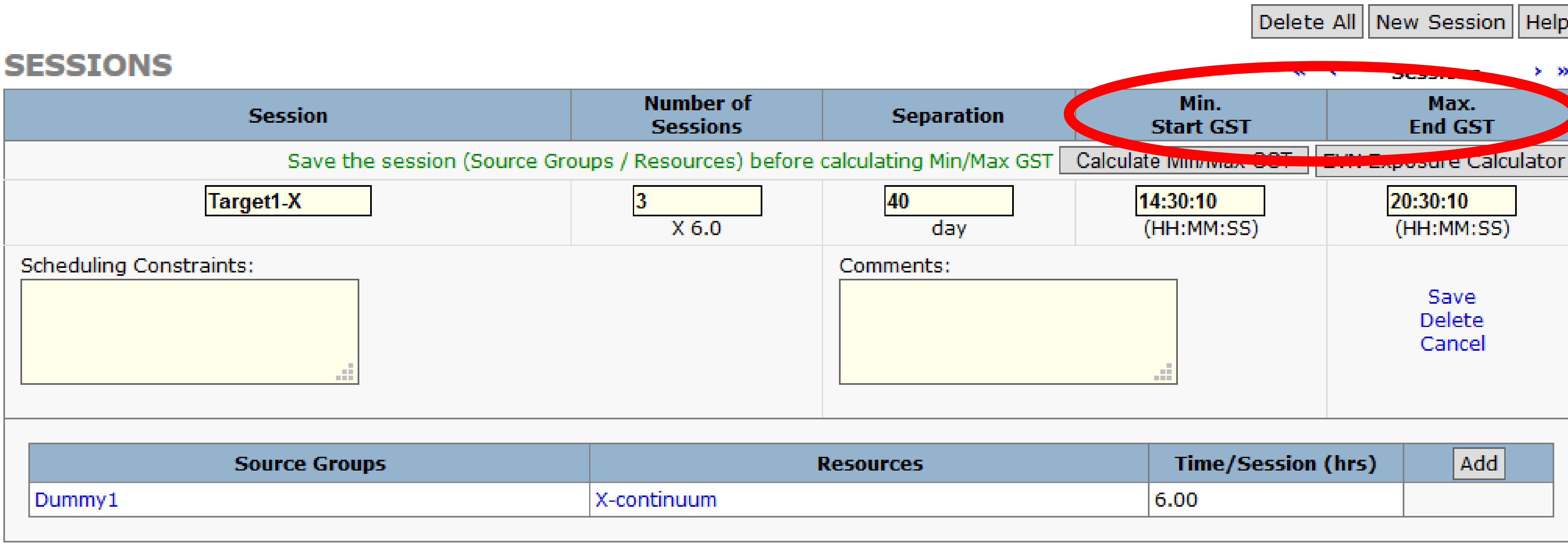
- Click "New Session" on the top right
- Enter name and number and separation of epochs, and LST range on top line
- Click Add
  - Select a source group and a resource
  - Enter time per session

Sessions - VLA



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

Sessions - VLBA



Differences from VLA:

- The start and end times are in GST (Greenwich Sidereal Time) instead of LST (Local Sidereal Time)
- No user-defined minimum elevation

Sessions - done

- Once you have entered all the sessions for your project, it will look something like this:

Delete All | New Session | Help

SESSIONS

« ‹ **Sessions** › »

Session	Number of Sessions	Separation	Min. Start GST	Max. End GST
⊞ Target1-X	3 X 6.0	40 day	14:30:10	20:30:10
⊟ Target1-C	10 X 8.0	6 day	13:30:10	21:30:10

Scheduling Constraints: Comments: Edit

Source Groups	Resources	Time/Session (hrs)	Add
Dummy1	C-continuum	8.00	

VLBA example shown
VLA looks very similar

Technical Justification

- Any details about your observation(s) that you can include here will free up space in your Science Justification!
  - TIP: Try filling out the Technical Justification before you begin writing the Scientific Justification.
- Keep in mind that both the Science Review Panel (SRP) and the Time Allocation Committee (TAC) will have access to your Technical Justification
  - They will also have comments from NRAO staff who review the Technical Justification

VLA Technical Justification – I

See 'Guide to Proposing for the VLA' for an example: go.nrao.edu/vla-prop

Save | He

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

Describe the use of subarrays:

- the number of subarrays and distribution of antennas between them,
- a summary of the frequency bands and correlator configuration (as you will explain and detail further below) and observing modes used in each of the subarrays,
- as well as any other specific details that would be of interest related to the subarray observing.

http://go.nrao.edu/vla-subs

If you are requesting observations in a future semester (beyond the one explicitly in this call), please explain why those observations are needed. Include information on how critical they are to the success of the overall project, and why a proposal for observations in that future semester cannot be submitted at the time of the call for proposals for that semester.

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, and what are they?
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 (for spectroscopy, list lines requested, with sky frequencies if large redshift):

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

NRAO

VLA Technical Justification – I

go.nrao.edu/vla-res

Configuration	A	B	C	D	A	B	C	D
B_{max} (km[1])	36.4	11.1	3.4	1.03	36.4	11.1	3.4	1.03
B_{min} (km[1])	0.68	0.21	0.035[5]	0.035	0.68	0.21	0.035[5]	0.035
Band	**Synthesized Beamwidth θ_{HPBW}**(arcsec)[1,2,3]				**Largest Angular Scale θ_{LAS}**(arcsec)[1,4]			
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

VLA Technical Justification – I

Describe the choice of samplers and the correlator set-up(s) requested. For spectral line observations also provide and explain details such as channel widths and number of channels per subband. For pulsar binning observations, explain how the number of bins selected is sufficient to achieve the project's goals; also verify that the frequency resolution is sufficient to avoid excessive dispersive smearing. http://go.nrao.edu/vla-samplers http://go.nrao.edu/widar http://go.nrao.edu/vla-obsline http://go.nrao.edu/opt-rct	
We are offering frequency averaging by factors of 2 or 4, for continuum, non-OTF, single-subarray observations. This will reduce the data rate and volume by the chosen factor and should therefore make post-processing easier. We only recommend this for C-band and higher frequencies. If you would like to use this, please specify the factor here: http://go.nrao.edu/vla-frqavg	
Note whether the observations will include mosaicking, and if so, whether the mosaicking is pointed or OTF (on-the-fly) mapping (give raster size) or number of pointings: http://go.nrao.edu/vla-obsmos	
Explain the flux sensitivity or brightness temperature sensitivity required to achieve the science goal (will the final images be sensitivity limited or dynamic range limited?): http://go.nrao.edu/vla-rms	
Give the required on-source integration time to achieve the required sensitivity, and total time including overhead; if the time requested 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. For spectroscopy, set the bandwidth to that appropriate for the line to be observed. 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	Browse... **No file selected.** Upload **File Name** | **Size** File Name | Size | delete | download

VLA 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 ~ 15% sensitivity.
  - If your science requires < 2 GHz BW, use the 8-bit samplers.

VLA Technical Justification - II

We are offering frequency averaging by factors of 2 or 4, for continuum, non-OTF, single-subarray observations. This will reduce the data rate and volume by the chosen factor and should therefore make post-processing easier. We only recommend this for C-band and higher frequencies. If you would like to use this, please specify the factor here: http://go.nrao.edu/vla-frqavg	
Note whether the observations will include mosaicking, and if so, whether the mosaicking is pointed or OTF (on-the-fly) mapping (give raster size) or number of pointings: http://go.nrao.edu/vla-obsmos	
Explain the flux sensitivity or brightness temperature sensitivity required to achieve the science goal (will the final images be sensitivity limited or dynamic range limited?): http://go.nrao.edu/vla-rms	
Give the required on-source integration time to achieve the required sensitivity, and total time including overhead; if the time requested 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. For spectroscopy, set the bandwidth to that appropriate for the line to be observed. 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	Browse… No file selected. Upload **File Name** **Size** File Name Size delete download
Note correlator dump time, data rate, and total volume of all raw data expected (not just the on-source fraction): http://go.nrao.edu/tim-res	
If your final images are to be of high dynamic range, encompass a wide fractional bandwidth, are at low frequencies, or have expected structure much larger than the synthesized beam, there will be problems with the imaging. In these cases, let us know how you plan to ameliorate these problems, including describing the software you intend to use. 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 proposal (e.g., HST, Chandra, Swift, or XMM-Newton), 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	

VLA Exposure Calculator

go.nrao.edu/ect

VLA Exposure Calculator

Array Configuration	A	
Number of Antennas	25	
Polarization Setup	Single / Dual	
Type of Image Weighting	Natural / Robust	
Representative Frequency	0.0000	GHz
Receiver Band	Unspecified	
Approximate Beam Size	Unknown	
Digital Samplers	3 bit / 8 bit	
Elevation	Zenith (90 degrees)	
Average Weather	Winter	
Calculation Type	Time / BW / 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	µJy
RMS Brightness (temp)	0.0000	mK
Confusion Level	0.0Jy	

Help Save

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

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

VLA Exposure Calculator

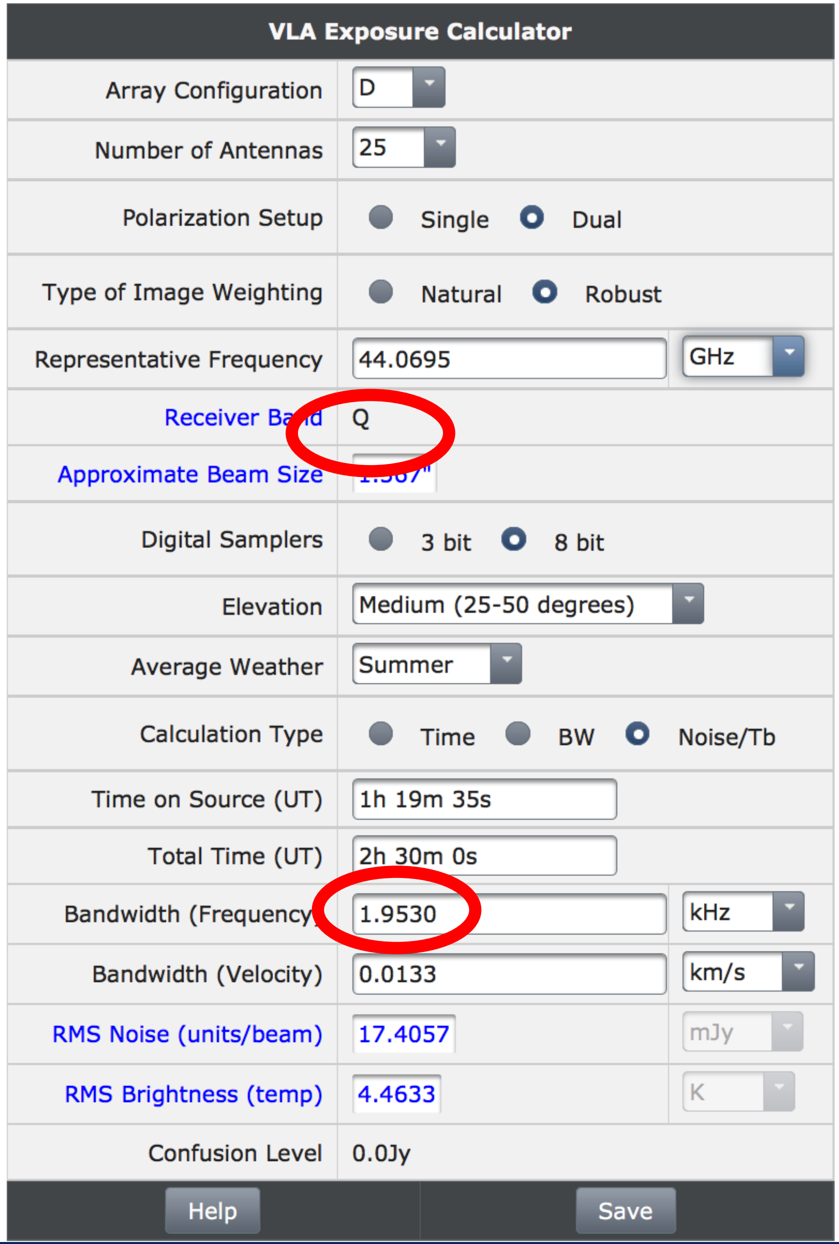
Array Configuration	D
Number of Antennas	25
Polarization Setup	Single / Dual (selected)
Type of Image Weighting	Natural (selected) / Robust
Representative Frequency	33.0000 GHz
Receiver Band	Ka
Approximate Beam Size	3.138"
Digital Samplers	3 bit (selected) / 8 bit
Elevation	Medium (25-50 degrees)
Average Weather	Summer
Calculation Type	Time / BW / Noise/Tb (selected)
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 μJy
RMS Brightness (temp)	0.5513 mK
Confusion Level	16.665489nJy

Help Save

> **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



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. If the phased VLA (Y27) is requested in the HSA observations, justify the acceptable VLA configuration. http://go.nrao.edu/vla-vlbi http://go.nrao.edu/vlba-res http://go.nrao.edu/vlba-plus	
If you are requesting observations in a future semester (beyond the one explicitly in this call), please explain why those observations are needed. Include information on how critical they are to the success of the overall project, and why a proposal for observations in that future semester cannot be submitted at the time of the call for proposals for that semester.	
Explain the choice of receiver(s) requested and whether or not dual polarization is required for each receiver: http://go.nrao.edu/vlba-frq	
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 of 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. http://go.nrao.edu/difx	
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: http://go.nrao.edu/vlba-rms http://go.nrao.edu/vlba-calman	
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://go.nrao.edu/ect-evn http://go.nrao.edu/vlba-rms http://go.nrao.edu/vlba-frq	Browse... **No file selected.** Upload **File Name** | **Size** File Name | Size | delete | download

NRAO

VLBA Technical Justification

- VLBA has two configuration “personalities”:
  - **Polyphase Filterbank (PFB):** 16 data channels, 32 MHz bandwidth each
    - **2048 Mbps data rate**
  - **Digital Downconverter (DDC):** 1, 2, 4, or 8 data channels, 1 to 128 MHz bandwidth each.
    - **4 Mbps to 4096 Mbps data rate** **USE THIS ONE!**
- 4096 Mbps (4 Gbps) recording available for 6cm, 4cm, 2cm, 1cm, 7mm, and 3mm receivers with DDC
  - 90cm limited to 256 Mbps
  - 50cm limited to 32 Mbps
  - 21cm and 13cm limited to 2048 Mbps

EVN Sensitivity Calculator   go.nrao.edu/ect-evn

EVN | e-EVN | VLBA | GLOBAL | GMVA   RESET | GO

Observing band & data rate [Mbit/s]

X - 3.6cm   2048

On-source integration time [min]

240

☑ Ef	☐ Nt	☐ My	☐ Pv	☐ Pa	☑ Hn
☐ Mc	☐ Sh	☐ Km	☐ Ro70	☐ Ho	☑ Nl
☐ On	☐ Tm65	☐ Sv	☐ Ro34	☐ Cd	☑ Fd
☐ Tr	☐ Ur	☐ Zc	☐ Pb	☐ Ap	☑ La
☐ Jb1	☐ Mh	☐ Bd	☐ Ku	☐ Go	☑ Kp
☐ Jb2	☐ Ys	☐ Wz	☐ Ky	☑ Gb	☑ Pt
☐ Cm	☐ Sr	☐ Ka	☐ Kt	☐ Y1	☑ Ov
☐ Wb	☐ Ar	☐ Ny	☐ At	☑ Y27	☑ Br
☐ W1	☐ Hh	☐ ALMA	☐ Mp	☑ Sc	☑ 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

64 ch   2 s   12000 km (EVN+VLBA)

Number of polarizations, subbands per polarizations, and bandwidth of a subband [MHz]

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).

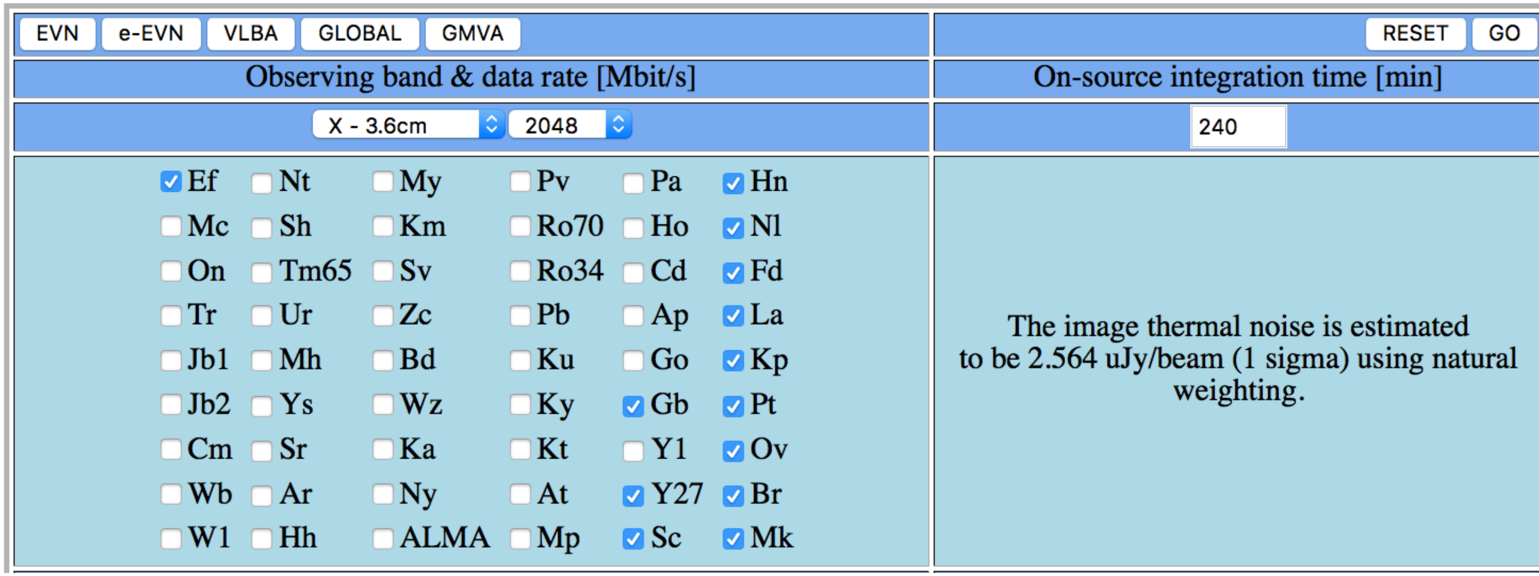
The field of view limited by time-smearing is 2.784 arcseconds. These values are calculated for 10% loss in the response of a point source, and they give the FoV radius from the pointing center.

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 go.nrao.edu/ect-evn



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. $\sigma = 2.564$ μJy/beam for 256MHz, so for 125 kHz channels (i.e., 2048 channels):

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

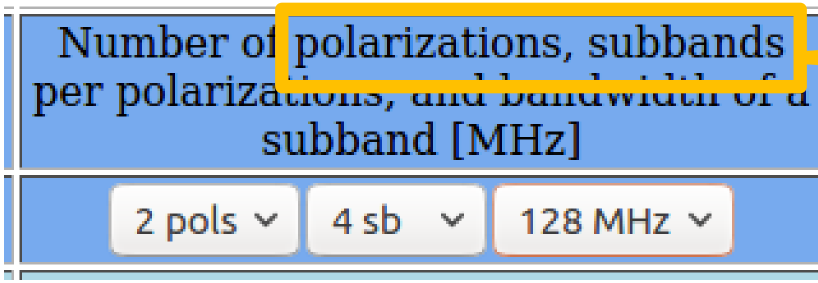
EVN Sensitivity Calculator go.nrao.edu/ect-evn

- Try playing with the Sensitivity Calculator yourself for a few minutes.
  - Start with just VLBA stations
  - Try adding HSA stations to see how the sensitivity changes
  - Try changing various settings to see how the sensitivity and data rate change
  - Note that you will get a warning message if your selected data rate does not match the calculated data rate

EVN Sensitivity Calculator vs. VLBA Resources

A subtle difference in calculating bit rate

EVN Calculator

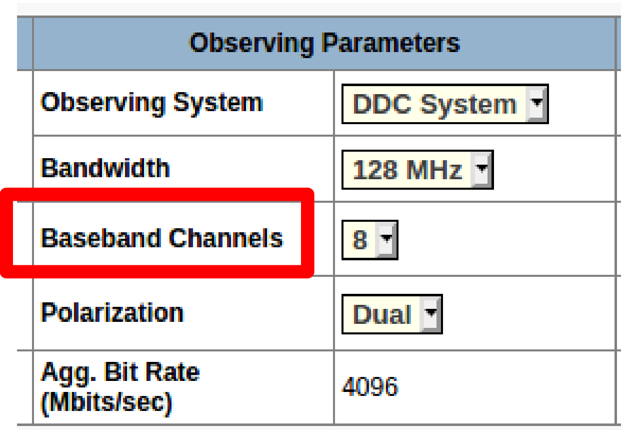


Polarizations & subbands

vs.

Baseband channels

VLBA Resources



Observing Parameters	
Observing System	DDC System
Bandwidth	128 MHz
Baseband Channels	8
Polarization	Dual
Agg. Bit Rate (Mbits/sec)	4096

- Number of baseband channels = (number of observed polarizations) x (number of subbands)
  - LCP only, 8 subbands = 8 baseband channels
  - Dual polarization, 4 subbands = 8 baseband channels
  - Full polarization, 4 subbands = 8 baseband channels
    - For Full Polarization, only 2 polarizations are recorded at the site. The crosshand polarizations are determined during correlation.

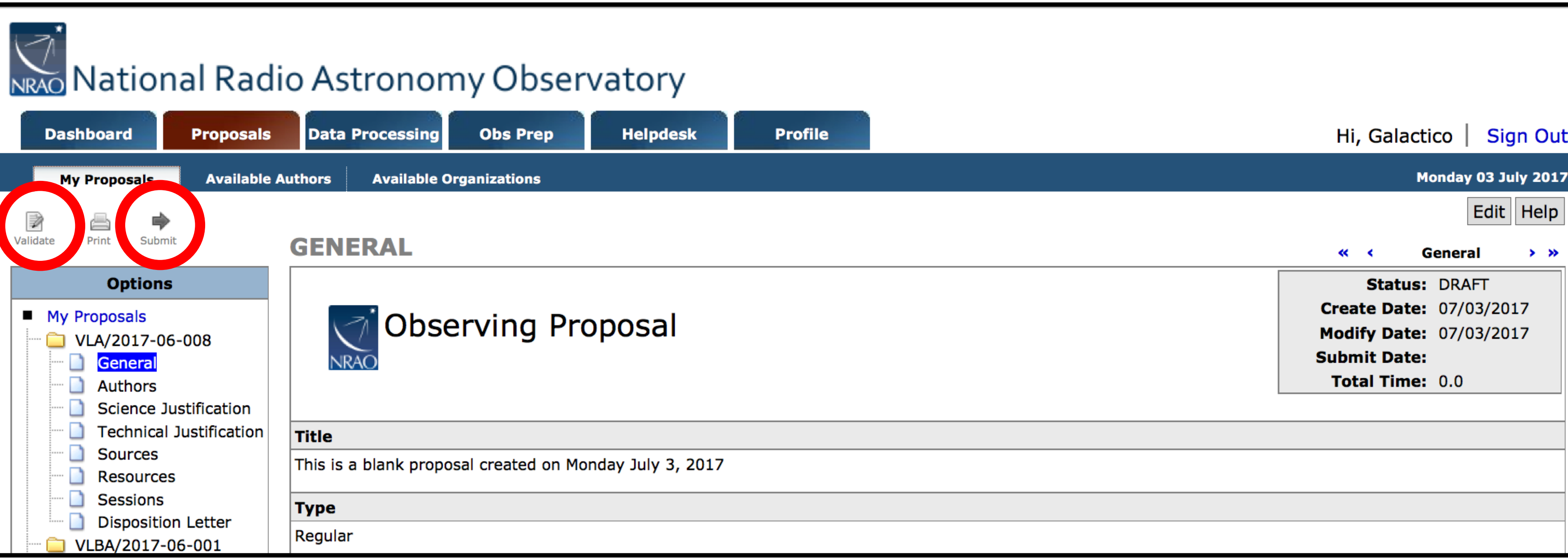
NOTE: The new term for "baseband channels" is "data channels"

EVN Sensitivity Calculator

The most common mistake

- Many people say they only need 7 or 8 antennas for their experiment, but then use 10 antennas in the EVN Sensitivity Calculator
- This kind of mistake will be caught during the technical reviews
- NRAO staff will make a comment to the Science Review Panel
  - "The proposers state that 3 hours on source is necessary with 8 antennas, but the sensitivity estimate was made using 10 antennas in the EVN Calculator. It is therefore unclear that the requested time is adequate to successfully complete the project."
- This is not necessarily detrimental to your proposal, but it does look bad

General information



- When you have uploaded your Scientific Justification and finished with all the other sections, click the "Validate" button to make sure there are no problems
- Once the proposal successfully validates, you can submit it
  – All authors will receive a confirmation email upon submission

After Submitting

- Once a proposal is submitted, you can unsubmit it any time up to the deadline (5:00PM Eastern Time, 21:00 UTC).
- Unsubmitting it will allow you to make changes.
- You must submit the proposal again **before the deadline**.
  - Sometimes there are problems trying to re-submit.
  - If a problem occurs, contact the Helpdesk (help.nrao.edu) immediately!

Final Notes and Resources:

- The next VLA/VLBA/GBT proposal deadline is February 1st
  - VLA B configuration
- If you have never proposed before*, please start early so there is time to get help from the NRAO helpdesk (help.nrao.edu). The VLA and VLBA Call for Proposals will be at:
  - go.nrao.edu/cfp
- The VLA and VLBA Observational Status Summaries are at:
  - 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

*Actually, ***everyone*** should start working on their proposals early.

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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.