

NRAO

The ALMA Observing Tool



Kartik Sheth

CSV Liaison / ALMA

North American ALMA Science Center

National Radio Astronomy Observatory



Atacama Large Millimeter/submillimeter Array

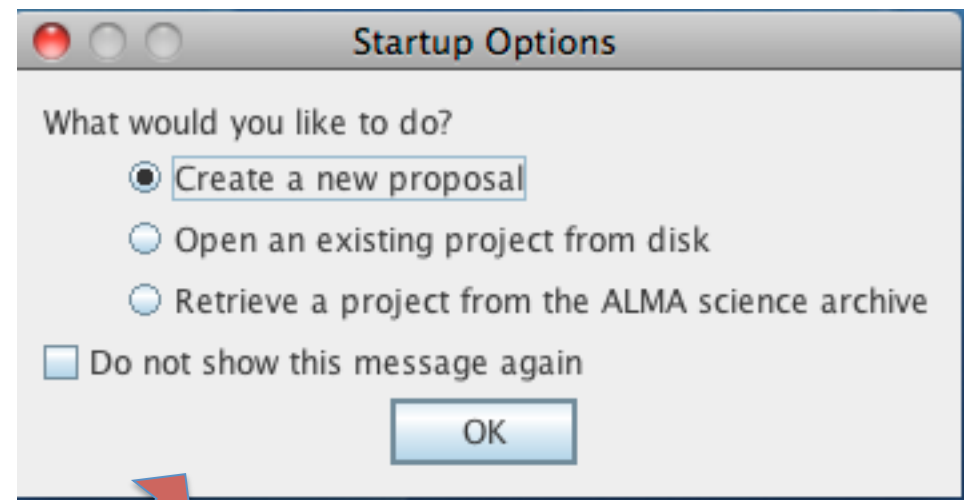
Expanded Very Large Array

Robert C. Byrd Green Bank Telescope

Very Long Baseline Array



Launch the Application



**A couple of dialog
boxes will pop up**

Hover over these icons to get help

- New Proposal (Phase I)
- Open project from ALMA archive
- ...
- New Phase I Science Goal...
- Sensitivity Calculator ...
- Help!

**Contextual help on
proposal workflow**



Project - Observing Tool for ALMA (Early Science), version [Dec27,1300CET]

File Edit View Tool Search Debug Help

Project Structure

- unnamed project
 - Project
 - Proposal

Editors

Proposal Information

Proposal Title

Proposal Cycle

Abstract (max. 300 words)

Launch Editor

Scientific Category

- ☐ Cosmology and the High Redshift Universe
- ☐ Galaxies and Galactic Nuclei
- ☐ ISM/Astrochemistry/Star Formation/protoplanetary disks/exoplanets
- ☐ Stellar Evolution/the Sun and the Solar System

Proposal Type

- ☐ Standard
- ☐ Target Of Opportunity

Student Project

Continuation

Related Proposals

Previous Proposals

Recent Publications

Investigators

Spectral Spatial Proposal Catalog

Feedback

Description Suggestion

Proposal Program Problems Information Log

view

Contextual Help

1. Please ensure you and your co-Is are registered with the [ALMA user portal](#)
2. Create a new proposal by either:
 - Selecting **File > New Proposal**
 - Clicking on the icon in the toolbar
 - Or clicking on this [link](#)
3. Click on the [proposal](#) tree node and complete the relevant fields.

Phase I: Science Proposal

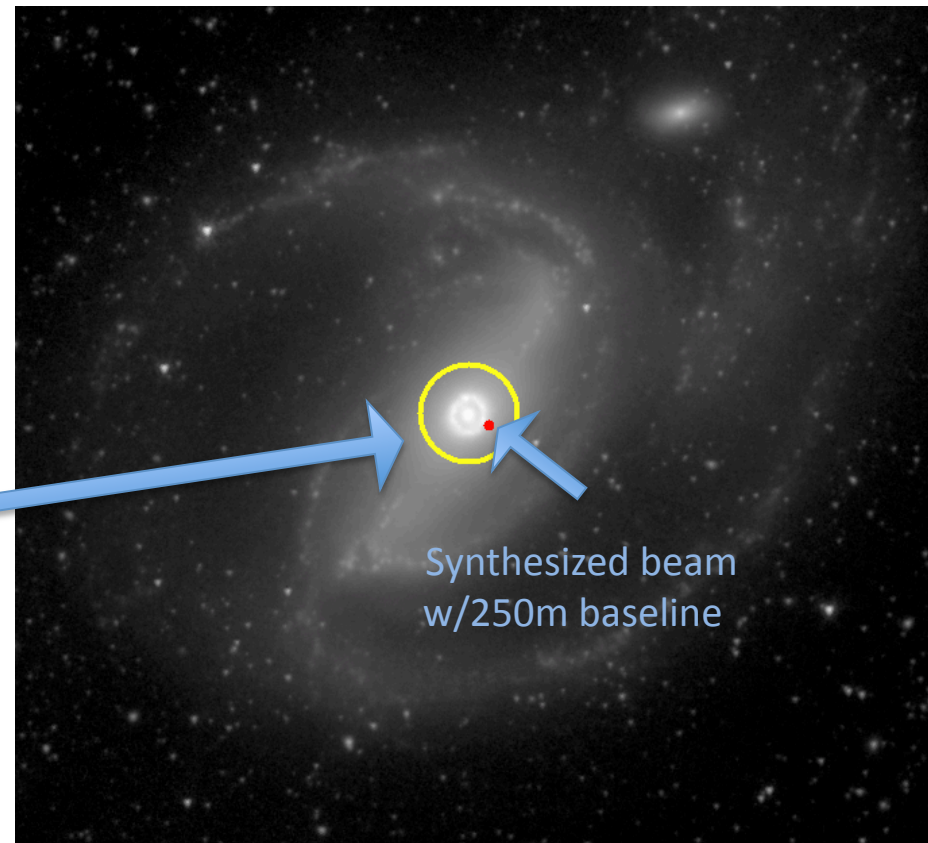
New Science Proposal Create Science Goals Validate Science Proposal Submit Science Proposal

Click on the overview steps to view the contextual help

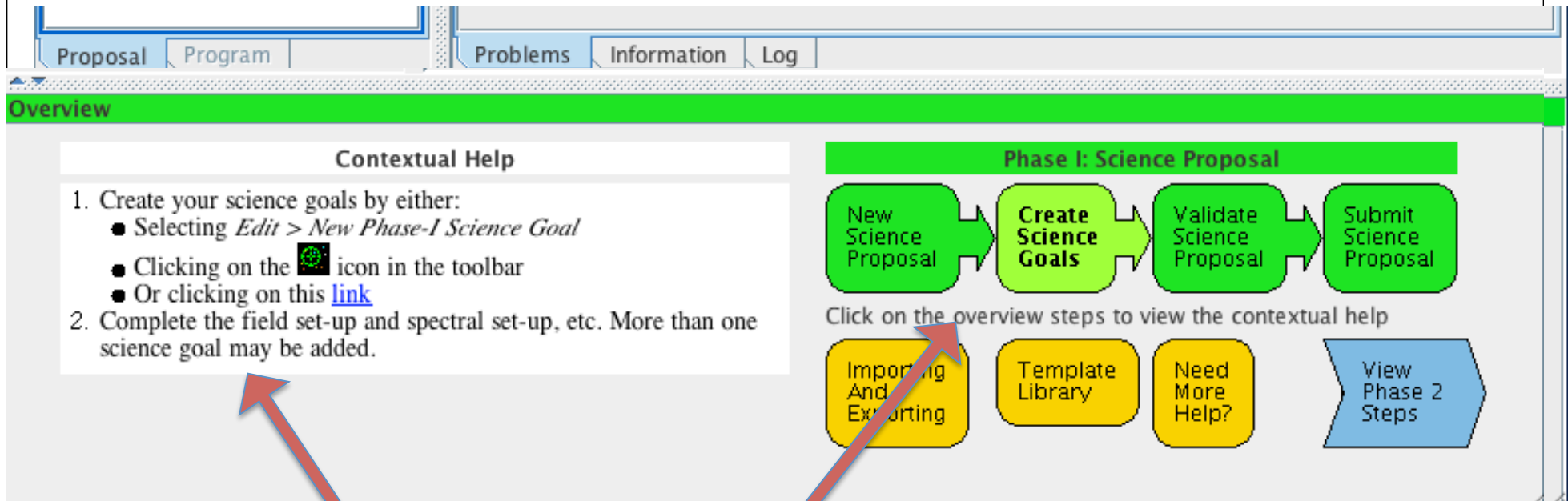
Importing And Exporting Template Library Need More Help? View Phase 2 Steps

A walk through of a simple example


- Observe molecular gas in NGC 1097
- Use CO (1-0) emission line
 - Rest frequency: 115.2712 GHz
 - Band 3 (2.6 mm)
- Size of NGC 1097 is 9' x 6'
- The field of view for a single pointing at 115 GHz is ~ 45"
- Single pointing of the nucleus
 - During ES, limited mosaicking capability expected



Proposal Preparation Workflow – Using the Contextual help



Contextual Help

- Create your science goals by either:
 - Selecting *Edit > New Phase-I Science Goal*
 - Clicking on the  icon in the toolbar
 - Or clicking on this [link](#)
- Complete the field set-up and spectral set-up, etc. More than one science goal may be added.

Phase I: Science Proposal

New Science Proposal → Create Science Goals → Validate Science Proposal → Submit Science Proposal

Click on the overview steps to view the contextual help

Importing And Exporting Template Library Need More Help? View Phase 2 Steps

Click through the tabs and follow the instructions on the left.

Fill out these
relevant fields

Project - Observing Tool for ALMA (Early Science), version [Dec27,1300CET]

File Edit View Tool Search Debug Help

Perspective 1

Project Structure

- unnamed project
 - Project
 - Proposal

Editors

Proposal Information

Proposal Title

Proposal Cycle

Abstract (max. 300 words)

Scientific Category

☐ Cosmology and the High Redshift Universe ☐ Galaxies and Galactic Nuclei

☐ ISM/Astrochemistry/Star Formation/protoplanetary disks/exoplanets ☐ Stellar Evolution/the Sun and the Solar System

Proposal Type

☐ Standard ☐ Target Of Opportunity

Student Project ☐

Continuation ☐

Related Proposals

Previous Proposals

Recent Publications



Investigators

Feedback

Description	Suggestion
<input type="text"/>	

Overview

Contextual Help

- Please ensure you and your co-Is are registered with the [ALMA user portal](#)
- Create a new proposal by either:
 - Selecting *File > New Proposal*
 - Clicking on the  icon in the toolbar
 - Or clicking on this [link](#)
- Click on the  [proposal](#) tree node and complete the relevant fields.

Phase I: Science Proposal

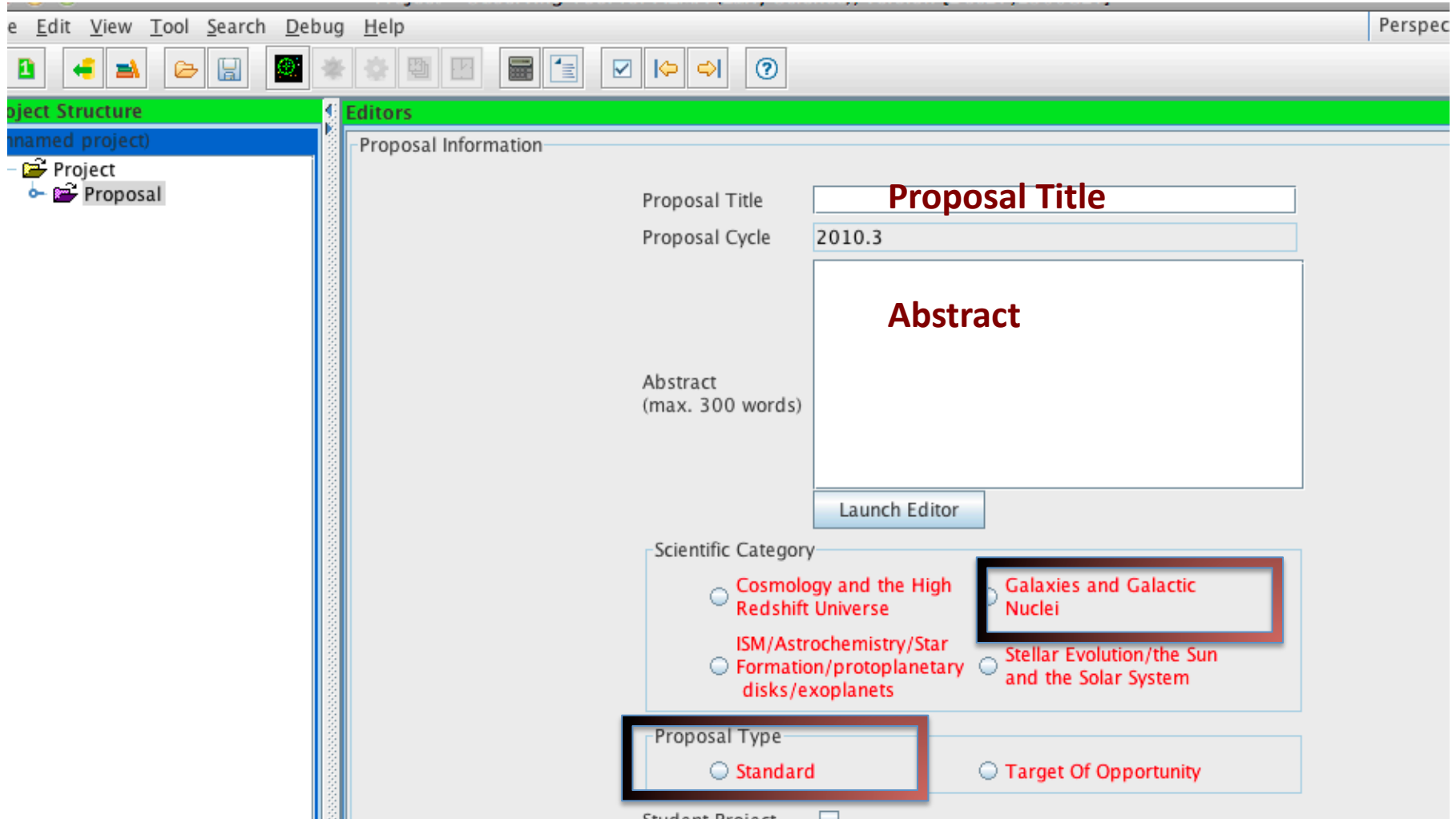
New Science Proposal → Create Science Goals → Validate Science Proposal → Submit Science Proposal

Click on the overview steps to view the contextual help

Importing And Exporting Template Library Need More Help? View Phase 2 Steps



Fill out these relevant fields



File Edit View Tool Search Debug Help

Object Structure

- Unnamed project)
 - Project
 - Proposal

Editors

Proposal Information

Proposal Title **Proposal Title**

Proposal Cycle 2010.3

Abstract (max. 300 words)

Abstract

Launch Editor

Scientific Category

- ☐ Cosmology and the High Redshift Universe
- ☐ ISM/Astrochemistry/Star Formation/protoplanetary disks/exoplanets
- ☒ Galaxies and Galactic Nuclei
- ☐ Stellar Evolution/the Sun and the Solar System

Proposal Type

- ☒ Standard
- ☐ Target Of Opportunity

Student Project ☐

Fill out these relevant fields



Proposal Type

☒ Standard

☐ Target Of Opportunity

Student Project ☐

Continuation ☐

Related Proposals

Previous Proposals

Recent Publications

Investigators

?

Title	Full name	Email	Affiliation	ALMA ID	Executive
PI	Not set	Not set	Not set	Not set	NONALMA

**Click here to set
PI and co-Is**



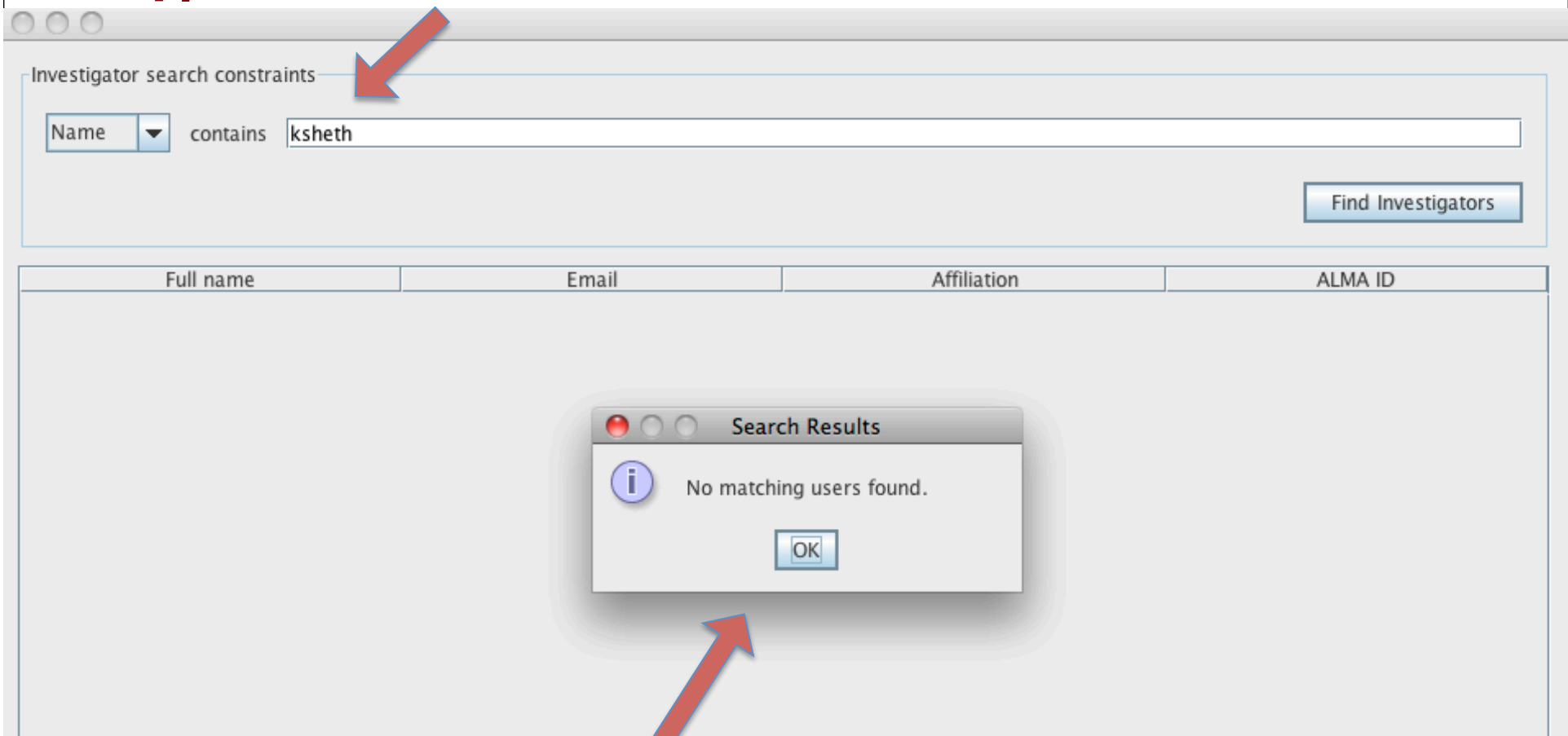
Set PI...

Add Col...

Remove Col

Add from Proposal...

Type in the name




Investigator search constraints

Name

Full name	Email	Affiliation	ALMA ID
-----------	-------	-------------	---------

Search Results

 No matching users found.

An error may pop up

Finding Help

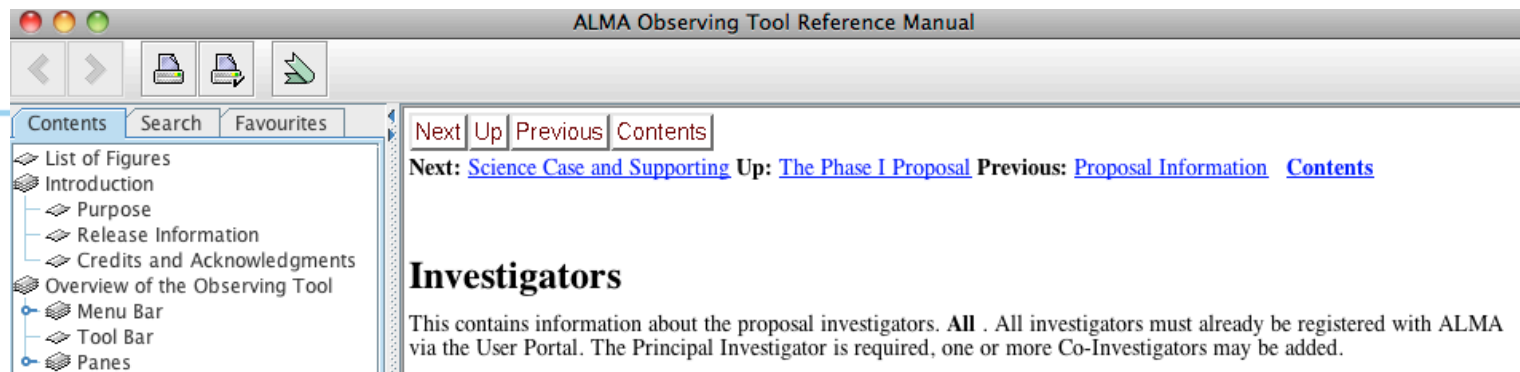
rs

Title	Full name	Email	Affiliation	ALMA ID	Executive
Not set	Not set	Not set	Not set	Not set	NONALMA

?

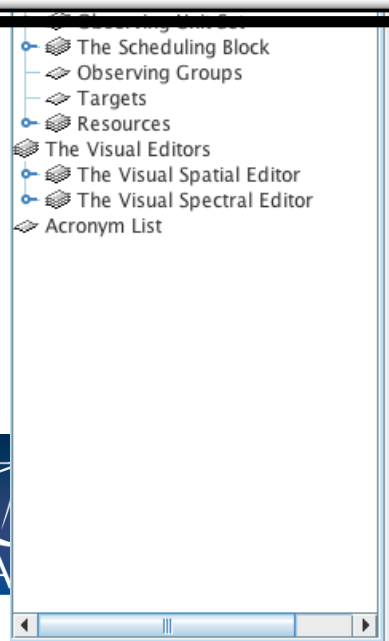
Display help from reference manual

- If you get stuck on any step, look for the ? Icon
- Click on it to get help.



Investigators

This contains information about the proposal investigators. **All** . All investigators must already be registered with ALMA via the User Portal. The Principal Investigator is required, one or more Co-Investigators may be added.



- **Title** : Title of the investigator.
- **Full Name** : This is the full name of the investigator as stored in the ALMA user database (via the user portal)
- **Email** : The email address of the investigator, as stored in the ALMA user database.
- **Affiliation** : The affiliation of the investigator, as stored in the ALMA user database.
- **ALMA ID** : This is the ALMA User Portal User Id of the investigator.
- **Executive** : The preferred ARC for this proposal and for the investigator. Some investigators will be entitled to use more than one ARC, this will be their choice for this proposal. Note this is not yet stored in the user database, so is currently free choice.

The buttons below the panel can be used the fill the Investigator table:

- **Set PI** : To fill in the PI data. The button open a window to search the ALMA database.
- **Add CoI** : To fill in the PI data. The button open a window to search the ALMA database.
- **Remove CoI** : To remove the CoI from the table.
- **Add from Proposal...** : Opens a window to select an ALMA Proposal and to use the proposal information for feeding the Investigators table.

Next Up Previous Contents

Next: [Science Case and Supporting](#) Up: [The Phase I Proposal](#) Previous: [Proposal Information](#) [Contents](#) *The ALMA OT Team, 2010 Dec 27*



Atacama Large Millimeter/Submillimeter Array

In search of our Cosmic Origins

☐ only in current

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home

Info

Welcome! You are now logged in.

Welcome to the ALMA Science Portal



by [Admin Admin](#) — last modified Jan 26, 2011 02:52 PM

Overview

The Atacama Large Millimeter/submillimeter Array (ALMA) is a major new facility for world astronomy. ALMA will be comprised of a giant array of 12-m antennas, with baselines up to 16 km and state-of-the-art receivers that cover all the atmospheric windows up to 1 THz. An additional, compact array of 7-m and 12-m antennas will greatly enhance ALMA's ability to image extended sources. Construction of ALMA started in 2003 and will be completed in 2013. Science observations will start already in 2011 with a small but growing number of antennas. The ALMA project is an international collaboration between Europe, East Asia and North America in cooperation with the Republic of Chile.

The ALMA User Portal provides information for astronomers seeking to learn more about the ALMA Observatory and provides the tools needed to plan and submit ALMA proposals. Further information about ALMA and available User Support can be found in the ALMA Regional Centers (ARC). Links to the ARC web pages can be found in the top banner.

User Services at ARCs

[ALMA@ESO](#)

[ALMA@NRAO](#)

[ALMA@NAOJ](#)

Adding the Sci / Tech Justification

Investigators

Title	Full name	Email	Affiliation	ALMA ID	Executive
PI	Andy, Biggs	abiggs@eso.org	ESO Headquarters...	abiggs	EU
Col	Alan Bridger	alan.bridger@stfc.a...	University of Cambr...	abridger	EU

Attach your scientific justification, etc. here as PDF files

Set PI...

Add Col...

Remove Col

Add from Proposal...

Science Case and Supporting Documents

Science Case(Mandatory, PDF, 2 pages max.)

Technical Case(Optional, PDF, 2 pages max.)

Figures(Optional, PDF, 2 pages max.)

Tables(Optional, PDF, 2 pages max.)

Attach

Detach

View

Attach

Detach

View

Attach

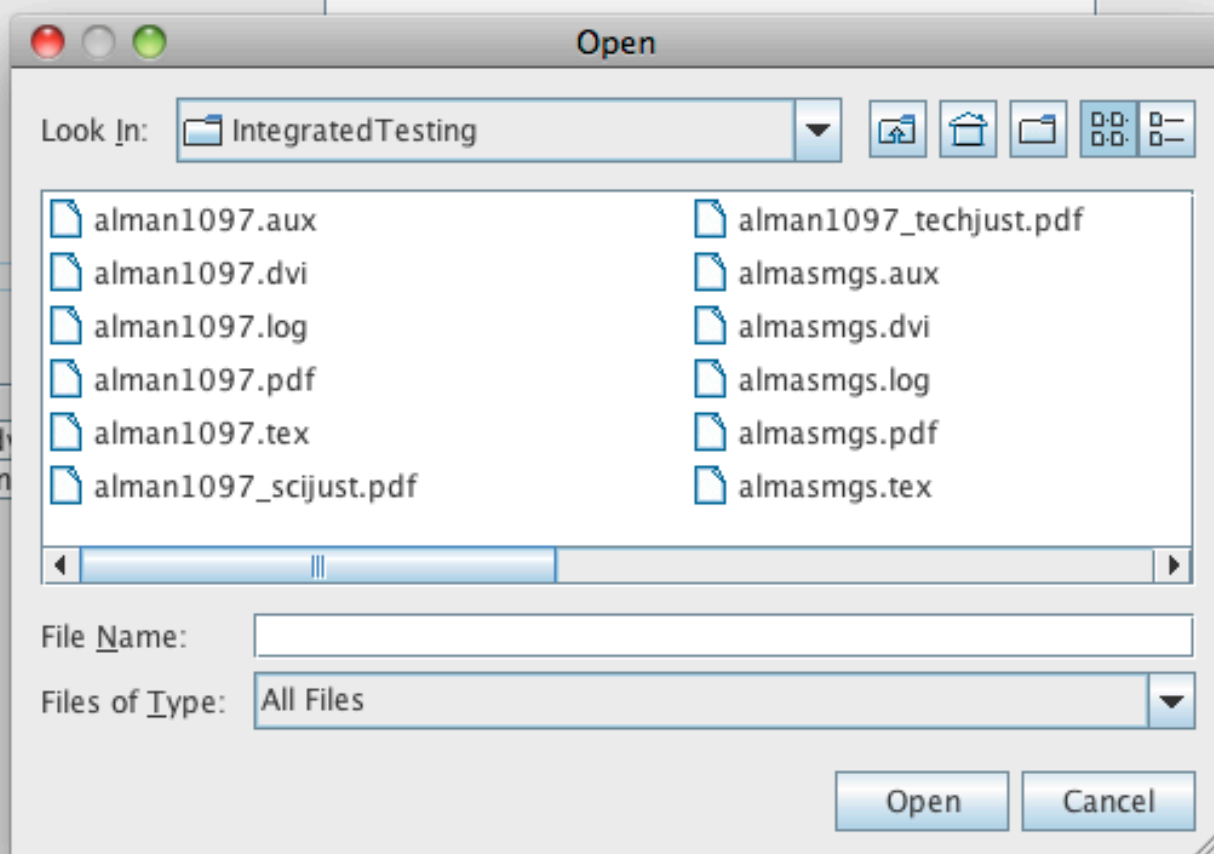
Detach

View

Attach

Detach

View




Case and Supporting Documents

Case(Mandatory, PDF, 2 pages max.)

Case(Optional, PDF, 2 pages max.)

Warning



Maximum number of pages allowed for the TECHNICAL_CASE document is 2, while AASJan11plan.pdf has 4 pages.

OK

Set Pl...

Add Col...

Remove Col

Add from Proposal...

Science Case and Supporting Documents

?

Science Case(Mandatory, PDF, 2 pages max.)	alman1097_scijust.pdf	Attach	Detach	View
Technical Case(Optional, PDF, 2 pages max.)	alman1097.pdf	Attach	Detach	View
Figures(Optional, PDF, 2 pages max.)		Attach	Detach	View

- Click on this turnkey to continue

Project Structure

- Nucleus of NGC 1097
 - Nucleus of NGC 1097
 - Proposal
 - Planned Observing
 - ObsUnitSet (empty)

Editors

Proposal Information

Proposal Title: Nucleus of NGC 1097

Proposal Cycle: 2010.3

Abstract (max. 300 words):
We propose to map the molecular gas emission in the nuclear region of the prototypical barred spiral galaxy, NGC 1097. These observations will shed crucial information on the connection between molecular gas, star formation and feeding of AGN.

[Launch Editor](#)

Scientific Category

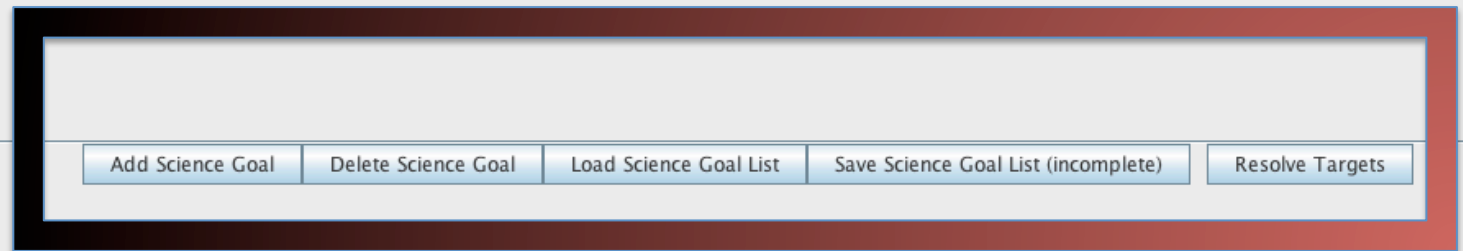
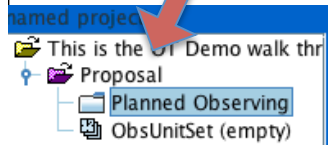
☐ Cosmology and the High Redshift Universe
☒ Galaxies and Galactic Nuclei

☐ ISM/Astrochemistry/Star Formation/protoplanetary disks/exoplanets
☐ Stellar Evolution/the Sun and the Solar System

Proposal Type

☒ Standard
☐ Target Of Opportunity

Press on the Planned Observing tab



The OT pane will change and give you this menu

Project Structure

- Nucleus of NGC 1097
 - Proposal
 - Planned Observing
 - Science Goal ()
 - Description
 - Field Setup
 - Calibration Setup
 - Spectral Setup
 - Control and Per
 - ObsUnitSet (empty)

Editors

Sci.Goal Name	Source Name	Field Type	RA	Dec	Spec.Type	Trans.	Frequency	Resolution	Sensitivity	Cal.
Nucleus of N...	NGC1097	Point	00:00:00.000	00:00:00.000	full		0.0 GHz	0.0 arcsec	0.0 Jy	sy...

A new line is created here that you can fill out

Information

The object "" was resolved by NED Names ESO
Co-ordinates are RA: 00:00:02.271, DEC: -00:00:02.912
Please check the results obtained

☐ Do not show this message again

OK

Add Science Goal

Delete Science Goal

Load Science Goal List

Save Science Goal List (incomplete)

Resolve Targets

Click on Add Science Goal,
& add your target

Then press Resolve Targets

You can also tab through these parts of a science goal

Nucleus of NGC 1097 – Observing Tool for ALMA (Early Science), version [Dec27,1300CET]

File Edit View Tool Search Debug Help Perspective 1

Project Structure

- Nucleus of NGC 1097
 - Proposal
 - Planned Observing
 - Science Goal (Nucleus of NGC 1097)
 - Description
 - Field Setup
 - Calibration Setup
 - Spectral Setup
 - Control and Performance
 - ObsUnitSet (empty)

Editors

Input the source you wish to look at and your mapping specification.
Alternatively you may define this with the Visual Editor – select the spatial tab.

NGC 1097

Source

Source Name: NGC 1097 [Resolve]

Choose a Solar System Object? ☐ Name of object: Mercury

System: J2000 Sexagesimal display? ☒ Parallax: 0.00000 mas

Source Coordinates: RA: 02:46:19.058 PM RA: 0.00000 mas/yr
Dec: -30:16:29.680 PM Dec: 0.00000 mas/yr
Resolved by simbad.ustrasbg.fr

Source Velocity: 1254.000 km/s hel RELATIVISTIC z 0.004192

Target Type: ☒ Multiple single point fields ☐ 1 rectangular field

Expected Target Properties (for Technical Assessment)

Peak Flux Density: 0.00000 Jy

Polarisation Percentage: 0.0

Line Width: 0.00000 km/s

Field Center Coordinates

PointingPattern: Offset ☒ Offset Unit: arcsec

RA [arcsec]	Dec [arcsec]
0.00000	0.00000

Add Delete

Add Target Delete Target Load Target List

Spectral Spatial Field Setup Catalog

Red text indicates mandatory input

Click on Spatial Tab to visualize obs



Editors

1x

341, 128

5956.0

02:46:15.772, -30:19:21.07 (J2000)

image filename : jsky3/cache/jsky2304928586409277682.fits

FOV Parameters

Frequency used

115.27

GHz

Refresh

(taken from)

Antenna Diameter

☒ 12m ☐ 7m

Main beam size

44.7 arcsec

Show FOV(circle)

☒

Image Query

Image Server

Digitized Sky (Version II) at ESO

Image Size(arcmin)

10.0

Query

NGC 1097

Source

Source Name

NGC 1097

Choose a Solar System Object?

☐

Name of object

Mercury

System

J2000

Sexagesimal display?

☒

Parallax

0.0000

Source Coordinates

RA

02:46:19.058

PM RA

0.0000

Dec

-30:16:29.680

PM Dec

0.0000

Resolved by simbad.ustrasbg.fr

Source Velocity

1254.000

km/s

hel

RELATIVISTIC

Target Type

☒ Multiple single point fields ☐ 1 rectangular field

Expected Target Properties (for Technical Assessment)

Peak Flux Density

1.0

Jy

Polarisation Percentage

0.0

Line Width

0.00000

km/s

Field Center Coordinates

PointingPattern : Offset

☒

Offset Unit

arcsec

Add

Delete

Add Target

Delete Target

Load Target List

Enter
freq



Click here to get an image

Object Structure

Unnamed project

- This is the OT Demo walk thr
- Proposal
 - Planned Observing
 - Science Goal (Map)
 - Description
 - Field Setup
 - Calibration Setup
 - Spectral Setup
 - Control and Per
 - ObsUnitSet (empty)

Editors

Select calibration setup.
If "system" is selected, the ALMA system will select default calibrators.

Goal Calibrators

?

Let the system decide how to calibrate your goal by selecting *System selects calibration strategy*, or specify your own calibration strategy and calibrator selection criteria with the *User-defined calibration* option.

- ② With user-defined calibration selected, add a dynamic calibrator (one that is found from the ALMA calibrator catalogue at execution time) or a fixed calibrator source with the *Add Dynamic Calibrator...* and *Add Fixed Calibrator...* buttons respectively. Remove calibrations by selecting a calibration and clicking *Delete Selected Calibration*. Edit the calibrator selection with the *Edit Criteria...* and *Edit Target...* buttons.

- ☒ System selects calibration strategy
- ☐ User-defined calibration

☐ System selects calibration strategy


☒ User-defined calibration

Calibration Int...	Target Type	Source Name	RA	Dec	
Amplitude	Dynamic Cali...		02:46:19.05...	-30:16:29.6...	Edit Criteria...
Pointing	Dynamic Cali...		02:46:19.05...	-30:16:29.6...	Edit Criteria...
Phase	Dynamic Cali...		02:46:19.05...	-30:16:29.6...	Edit Criteria...
Bandpass	Dynamic Cali...		02:46:19.05...	-30:16:29.6...	Edit Criteria...
Delay	Dynamic Cali...		02:46:19.05...	-30:16:29.6...	Edit Criteria...

Amplitude Calibrator Query Editor

Calibrator Search Parameters

The ALMA calibrator catalogue will be filtered to find sources matching the selection criteria below. Enter a positive search radius to enable the cone search and/or enter values into the flux, frequency and time parameter pairs to enable these filters. Parameter pairs left as zero will disable the filter. If all filters are disabled, the entire calibrator catalogue will be returned.

 This filter has been removed from your search criteria. Enter a non-zero value to enable the filter.

Cone Search

RA 02:46:19.058

Dec -30:16:29.679

Search Radius (°) 20.0

Frequency

 Min 0.00000

GHz

 Max 0.00000

GHz

Flux


 Min 0.00000

Jy

 Max 0.00000

Jy

Time Since Observed

 Min (days) 0.0


 Max (days) 0.0

Calibrator Tag

UNDEFINED

Search Results

Click the 'Test Query' button to find the set of calibrators that match your constraints.

 These results could be different at project execution time

Source Name	RA	Dec	Separation	Frequency	Flux Density	Last Observed

Test Query

using

Local File Catalogue

Close



named project)

- 📁 This is the OT Demo walk thr
- 📁 Proposal
 - 📁 Planned Observing
 - 📁 Science Goal (Map
 - 📄 Description
 - 📄 Field Setup
 - 📄 Calibration Setu
 - 📄 **Spectral Setup**
 - 📄 Control and Per
 - 📁 ObsUnitSet (empty)

You can set up spectral elements (windows) to be observed.
Up to 4 can be observed at the highest frequency resolution depending on the bandwidths you specify.
If you want to setup more than 4, you need to arrange them into 4 or fewer sets of spectral elements/windows.
Those sets are called "Basebands", and the width of a baseband is 2GHz.

Spectral Type

Spectral Type: Choose the type of spectral observation you wish to make

- ☒ Up to 4 spectral elements/windows
- ☐ More than 4 spectral elements/windows
- ☐ Single continuum (average frequency)
- ☐ Spectral scan

Polarization Products desired

- ☐ SINGLE_X
- ☐ SINGLE_Y
- ☒ DOUBLE
- ☐ FULL

Up to 4 spectral elements/windows

Center Freq Rest	Center Freq Sky	Transition	Bandwidth,Resolution	Continuum

Press here

Select Lines to Observe...

Add

Delete

Feedback

No spectral window in the list. No suitable receiver band for the range :[0.0 GHz, 0.0 GHz]

A Splatalogue window will open up.

Type in CO

Filter / Species

☒ Include description in search

ALMA Band

1 2 3 4 5 6 7 8 9 10

Sky Frequency (GHz)

Min 31.3 Max 950

Maximum Upper-state Energy (K)

0 20 40 60 80 100 ∞

Molecule Filter / Environment

Show all molecules

Reset Filters Search Online

Help

The initial results shows all lines in the Observing Tool's offline database, which contains selected transitions from the ALMA spectral line catalogue. Additional transitions from the full ALMA catalogue can be retrieved from the network and added to the results set by clicking [Search Online](#).

Note: the Search Online button is only enabled when a species is given and one ALMA band is selected using the controls above.

Select Spectral Lines

Transitions matching your filter settings

Transition	Description	Sky Frequency	Rest Frequency	Upper-state Ener...	Lovas Intensity	Sij μ^2
H(99) ϵ	Hydrogen Reco...	31.351 GHz	31.482 GHz			
H(84) γ	Hydrogen Reco...	31.452 GHz	31.583 GHz			
HC7N $v=0$ J...	2,4,6-Heptatri...	31.452 GHz	31.584 GHz	21.98 K	0.3	650....
He(84) γ	Helium Recom...	31.464 GHz	31.596 GHz			
C(84) γ	Carbon Recom...	31.467 GHz	31.599 GHz			
HC13CCCN...	Cyanobutadiyne	31.492 GHz	31.624 GHz	9.87 K	0.01	224....
HCCC13CN...	Cyanobutadiyne	31.504 GHz	31.636 GHz	9.87 K	0.01	224....
H(92) δ	Hydrogen Reco...	31.566 GHz	31.698 GHz			
He(92) δ	Helium Recom...	31.579 GHz	31.711 GHz			
C6H J=23/2...	1,3,5-Hexatri...	31.749 GHz	31.882 GHz	9.31 K	0.2	693....
C6H J=23/2...	1,3,5-Hexatri...	31.752 GHz	31.886 GHz	9.31 K	0.18	693....
H2COH+ 3(...	Hydroxymethyli...	31.781 GHz	31.915 GHz	18.26 K	0.1	3.4 D ²
HCC13CCCN...	Cyanobutadiyne	31.785 GHz	31.919 GHz	9.96 K	0.01	224....
HCCC13CN...	Cyanobutadiyne	31.789 GHz	31.923 GHz	9.96 K	0.01	224....
HC5N J=12-...	Cyanobutadiyne	31.818 GHz	31.952 GHz	9.97 K	1.77	224....
HC9N 55-54	2,4,6,8-Nonat...	31.823 GHz	31.956 GHz	42.94 K	0.01	1487...
U-32033.9	UNIDENTIFIED	31.9 GHz	32.034 GHz		0.005	
C6H J=23/2...	1,3,5-Hexatri...	31.961 GHz	32.095 GHz	21.75 K	0.01	704....

Add to Selected Transitions

Selected transitions

Transition	Description	Sky Frequency	Rest Frequency	Upper-state Energy	Lovas Intensity	Sij μ^2
------------	-------------	---------------	----------------	--------------------	-----------------	-------------

Remove from Selected Transitions

Done

Select Spectral Lines

Filter / Species

☒ Include description in search

ALMA Band
 1 2 3 4 5 6 7 8 9 10

Frequency (GHz)
 Min Max

Maximum Upper-state Energy (K)
 0 20 40 60 80 100 ∞

Molecule Filter / Environment
 Show

Help
 The initial results shows all lines in the Observing Tool's offline database, which contains selected transitions from the ALMA spectral line catalogue. Additional transitions from the full ALMA catalogue can be retrieved from the network and added to the results set by clicking *Search Online*.

Note: the Search Online button is only enabled when a species is given and one ALMA band is selected using the controls above.

Transitions matching your filter settings

Transition	Description	Sky Frequency	Rest Frequency	Upper-state Energy	Lovas Intensity	Sij μ^2
CO v=0 1-0	Carbon Monoxide	114.79 GHz	115.271 GHz	5.53 K	60	0.01 D ²
CO v=0 2-1	Carbon Monoxide	229.576 GHz	230.538 GHz	16.6 K	70	0.02 D ²
CO+ J=2-1,...	Carbon Monoxi...	234.805 GHz	235.79 GHz		0.1	0.67 D ²
CO+ J=2-1,...	Carbon Monoxi...	235.077 GHz	236.063 GHz		0.1	1.2 D ²
CO v=0 3-2	Carbon Monoxide	344.353 GHz	345.796 GHz	33.19 K	70	0.04 D ²
CO+ J=3-2,...	Carbon Monoxi...	352.265 GHz	353.741 GHz		0.1	1.2 D ²
CO+ J=3-2,...	Carbon Monoxi...	352.537 GHz	354.014 GHz		0.18	1.71 D ²
CO v=0 4-3	Carbon Monoxide	459.116 GHz	461.041 GHz	55.32 K	60	0.05 D ²
CO v=0 6-5	Carbon Monoxide	688.587 GHz	691.473 GHz	116.16 K	100	0.07 D ²
CO v=0 7-6	Carbon Monoxide	803.285 GHz	806.652 GHz	154.87 K	110	0.08 D ²

Selected transitions

Transition	Description	Sky Frequency	Rest Frequency	Upper-state Energy	Lovas Intensity	Sij μ^2
CO v=0 1-0	Carbon Mo...	114.79 GHz	115.271 GHz	5.53 K	60	0.01...

Double click
on the
transition

Transition
moves into
this window



You can set up spectral elements (windows) to be observed.
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If you want to setup more than 4, you need to arrange them into 4 or fewer sets of spectral elements/windows.
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Spectral Type ?

- Spectral Type: Choose the type of spectral observation you wish to make
- Polarization Products desired
- ☒ Up to 4 spectral elements/windows
 - ☐ More than 4 spectral elements/windows
 - ☐ Single continuum (average frequency)
 - ☐ Spectral scan
 - ☐ SINGLE_X ☐ SINGLE_Y ☒ DOUBLE ☐ FULL

Up to 4 spectral elements/windows ?

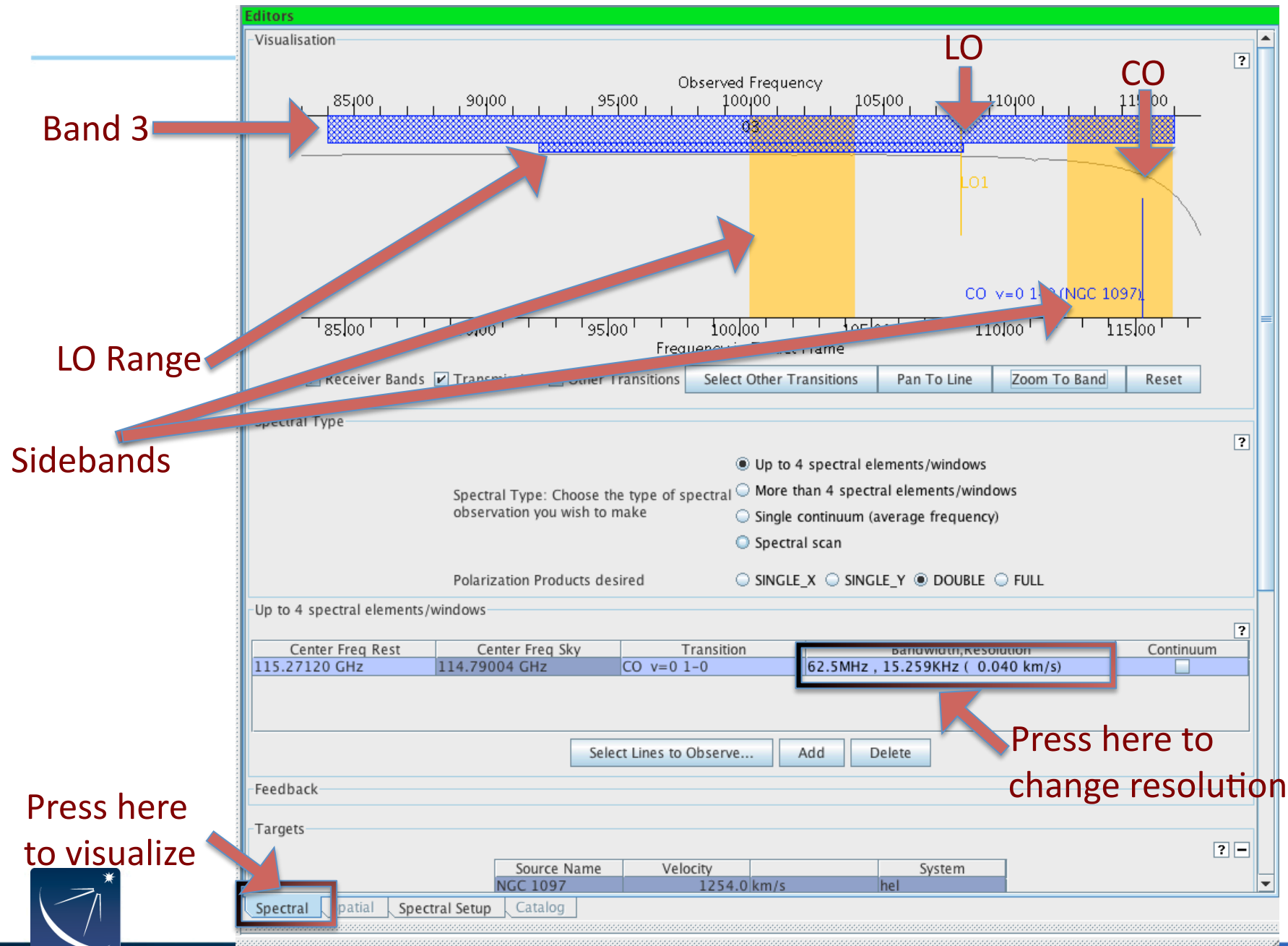
Center Freq Rest	Center Freq Sky	Transition	Bandwidth, Resolution	Continuum
115.27120 GHz	114.79004 GHz	CO v=0 1-0	62.5MHz , 15.259KHz (0.040 km...	<input type="checkbox"/>

Select Lines to Observe...

Add

Delete

Feedback



Spectral Type

Spectral Type: Choose the type of spectral observation you wish to make

Polarization Products desired

Up to 4 spectral elements/windows

☒ Up to 4 spectral elements/windows
☐ More than 4 spectral elements/windows
☐ Single continuum (average frequency)
☐ Spectral scan

☒ SINGLE_X ☐ SINGLE_Y ☐ DOUBLE ☐ FULL

Center Freq Rest	Center Freq Sky	Transition	Bandwidth, Resolution
15.27120 GHz	114.79004 GHz	CO v=0 1-0	62.5MHz , 7.6294KHz (0.020 km/s)
			62.5MHz , 7.6294KHz (0.020 km/s)
			125MHz , 15.259KHz (0.040 km/s)
			250MHz , 30.518KHz (0.080 km/s)
			500MHz , 61.035KHz (0.159 km/s)
			1000MHz , 122.07KHz (0.319 km/s)
			2000MHz , 244.14KHz (0.638 km/s)

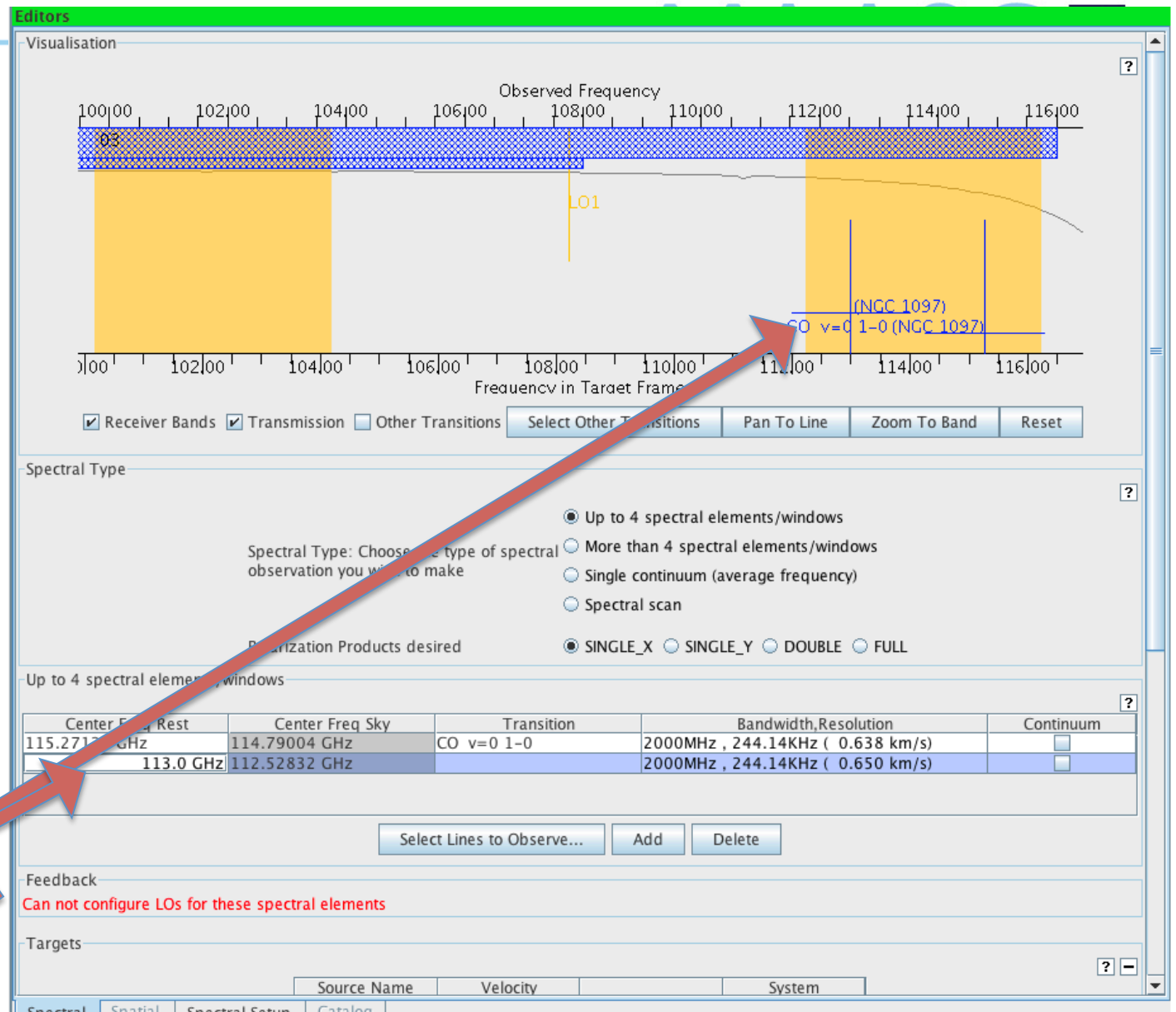
Select Lines to Observe...

Feedback

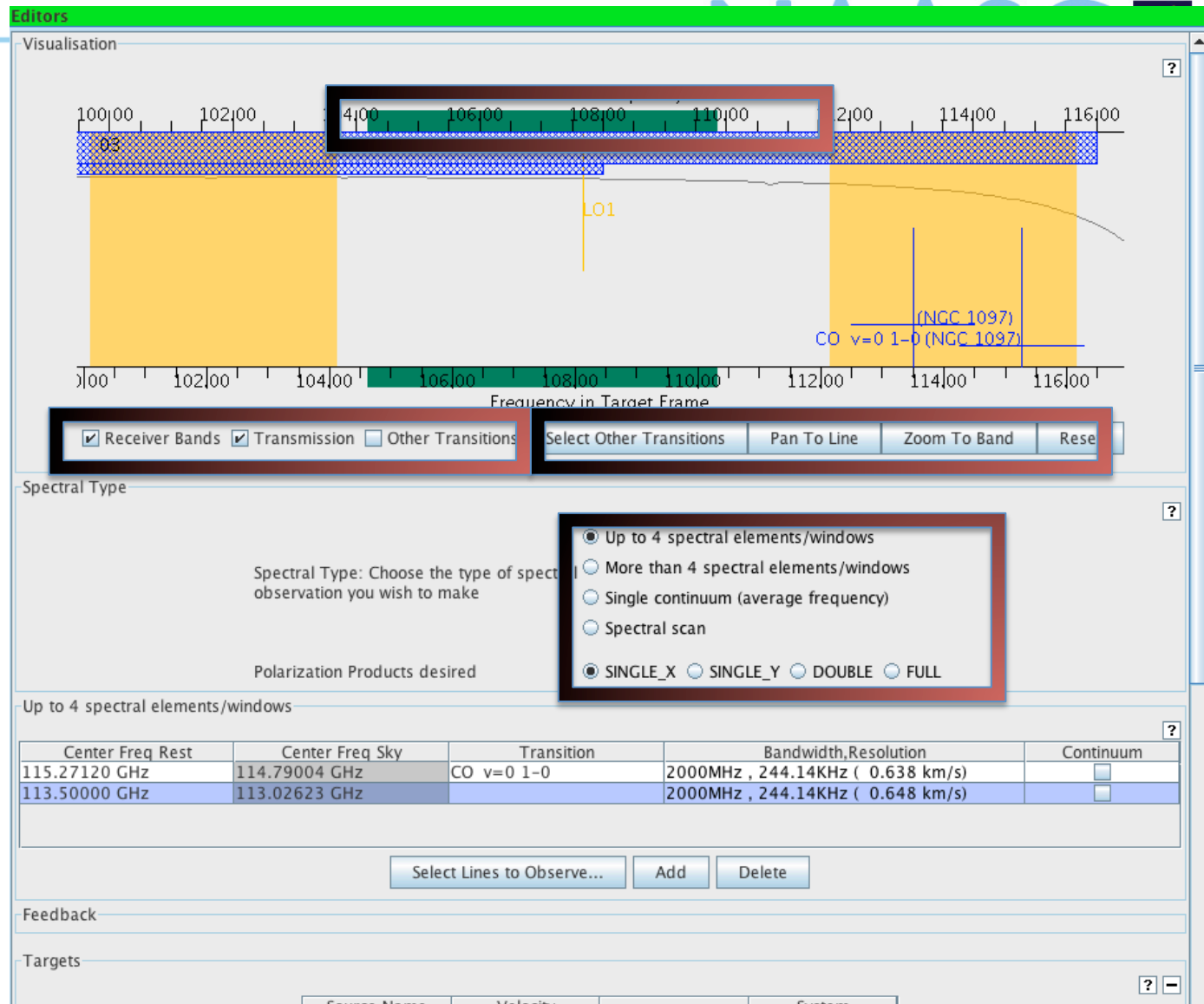
Tradeoff between
bandwidth & resolution

Can add up to 4 spectral windows – must have same resolution/bandwidth for early science

Location of windows is constrained



A very
versatile tool
with lots of
options



Project Structure

- Nucleus of NGC 1097
 - Proposal
 - Planned Observing
 - Science Goal (Nucleus)
 - Description
 - Field Setup
 - Calibration Setup
 - Spectral Setup
 - Control and Performance Parameters
- ObsUnitSet (empty)

Editors

These parameters will be used to determine the antenna configurations your observing requires, along with the integration times required. The representative frequency is the frequency used to evaluate these performance targets.

Control and Performance Parameters

Representative Frequency: 114.79004 GHz

Antenna Beamsize (λ/D): 12m 44.9 arcsec 7m 77.0 arcsec

Angular Resolution: 0.00000 arcsec

Largest Scale: 0.00000 arcsec

Desired Sensitivity per Beam: 0.00000 Jy equivalent to Infinity K

Dynamic Range: 1.0

The ACA is not available yet, but the suggest button may be used:

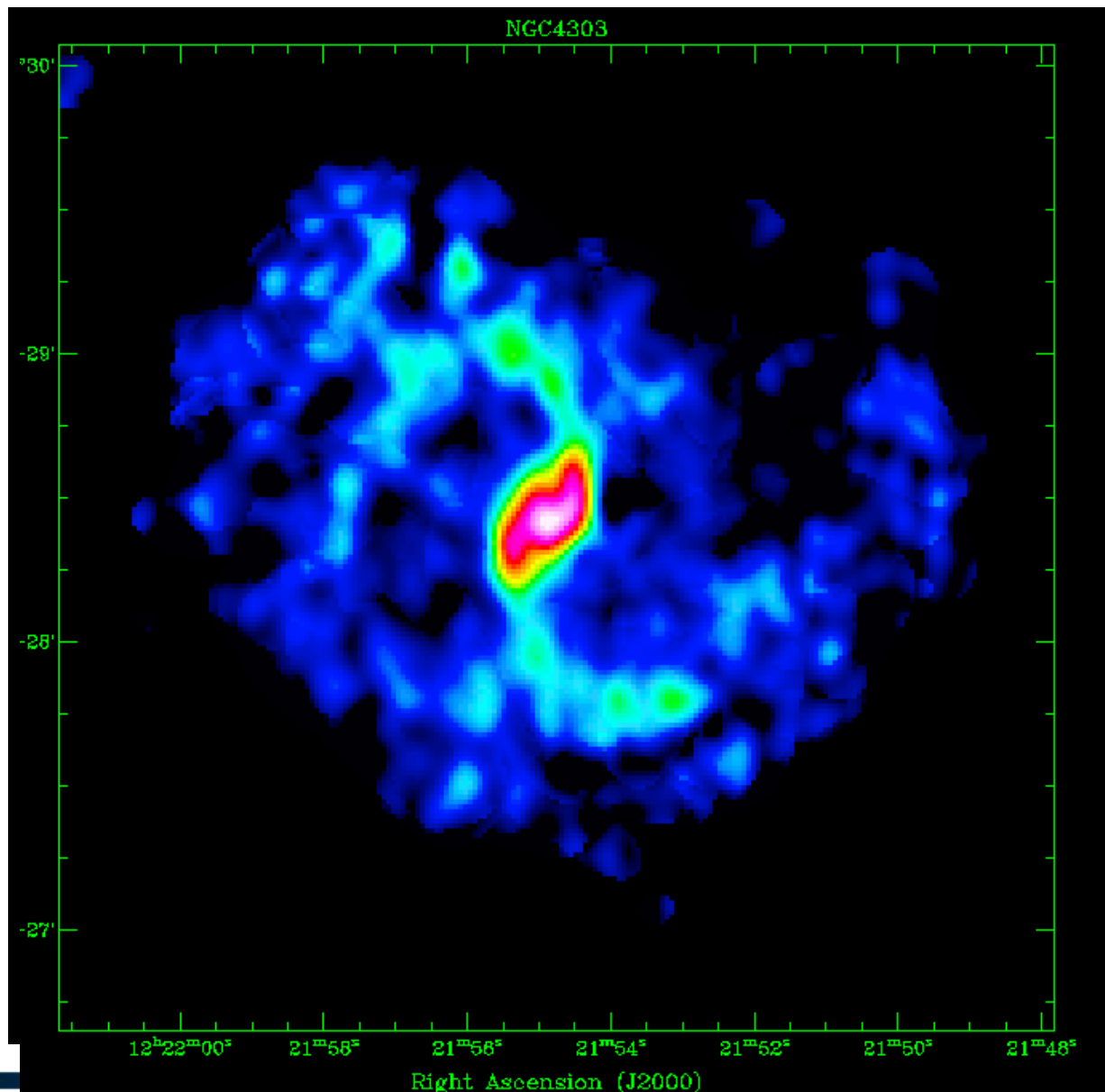
Is this observing time constrained (occultations, coordinated observing,...)? ☐ Yes ☒ No

Sensitivity Calculator Time Estimate

Suggest

Request the resolution and sensitivity you need for your science goal

Typical CO Emission in Nearby Galaxies

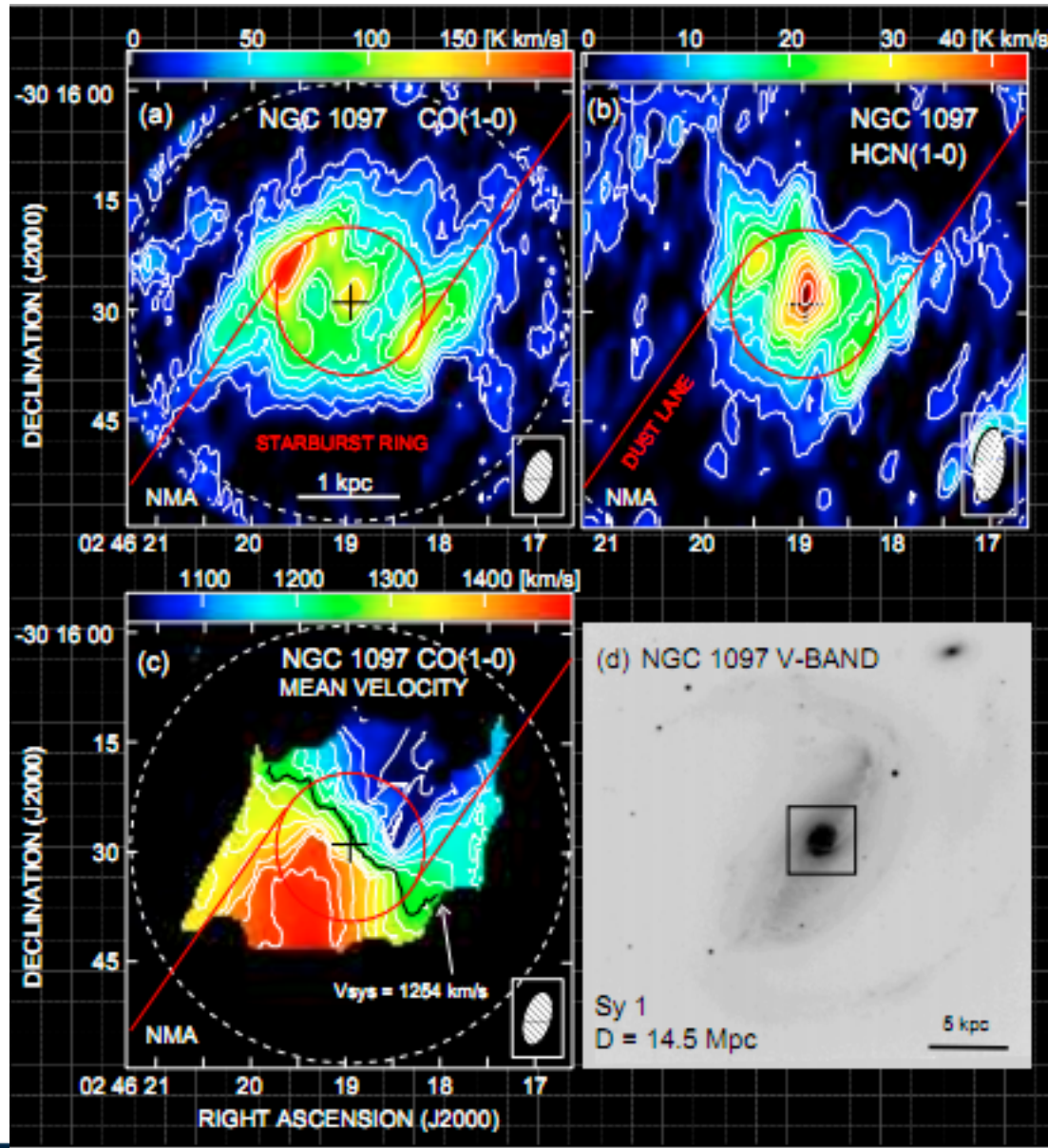


Start thinking in terms of data cubes

We can measure not only the mass and distribution of the molecular gas but also its kinematics

NGC 4303

Back to our example of NGC 1097



To get a 10σ detection on the faintest emission in the map requires $\sim 10 \text{ mJy/bm}$ in a 10 km/s channel.

The ALMA correlator gives 0.64 km/s channels – we will bin 15 channels to get to 10 km/s.

So required sensitivity in 1 ALMA correlator channel $\sim 10 \text{ mJy/bm} \times \sqrt{15} \sim 38 \text{ mJy/bm}$

Back to our example of NGC 1097

Editors

These parameters will be used to determine the antenna configurations your observing requires, along with the integration times required.
The representative frequency is the frequency used to evaluate these performance targets.

Control and Performance Parameters ?

Representative Frequency GHz

Antenna Beamsize (λ/D)

Angular Resolution arcsec

Largest Scale arcsec

Desired Sensitivity per Beam mJy equivalent to K

Dynamic Range

The ACA is not available yet,
but the suggest button may be used:

Is this observing time constrained
(occultations, coordinated observing,...)? ☐ Yes ☒ No

Sensitivity Calculator

Common Parameters

Dec	-30:16:29.680		
Polarization	Single		
Observing Frequency	114.79004	GHz	
Bandwidth per Polarization	244.14063	kHz	
Water Vapour Column Density	Calculator Chooses		
tau/Tsky	tau=0.169, Tsky=40.711 K		
Tsys	108.690 K		

Individual Parameters

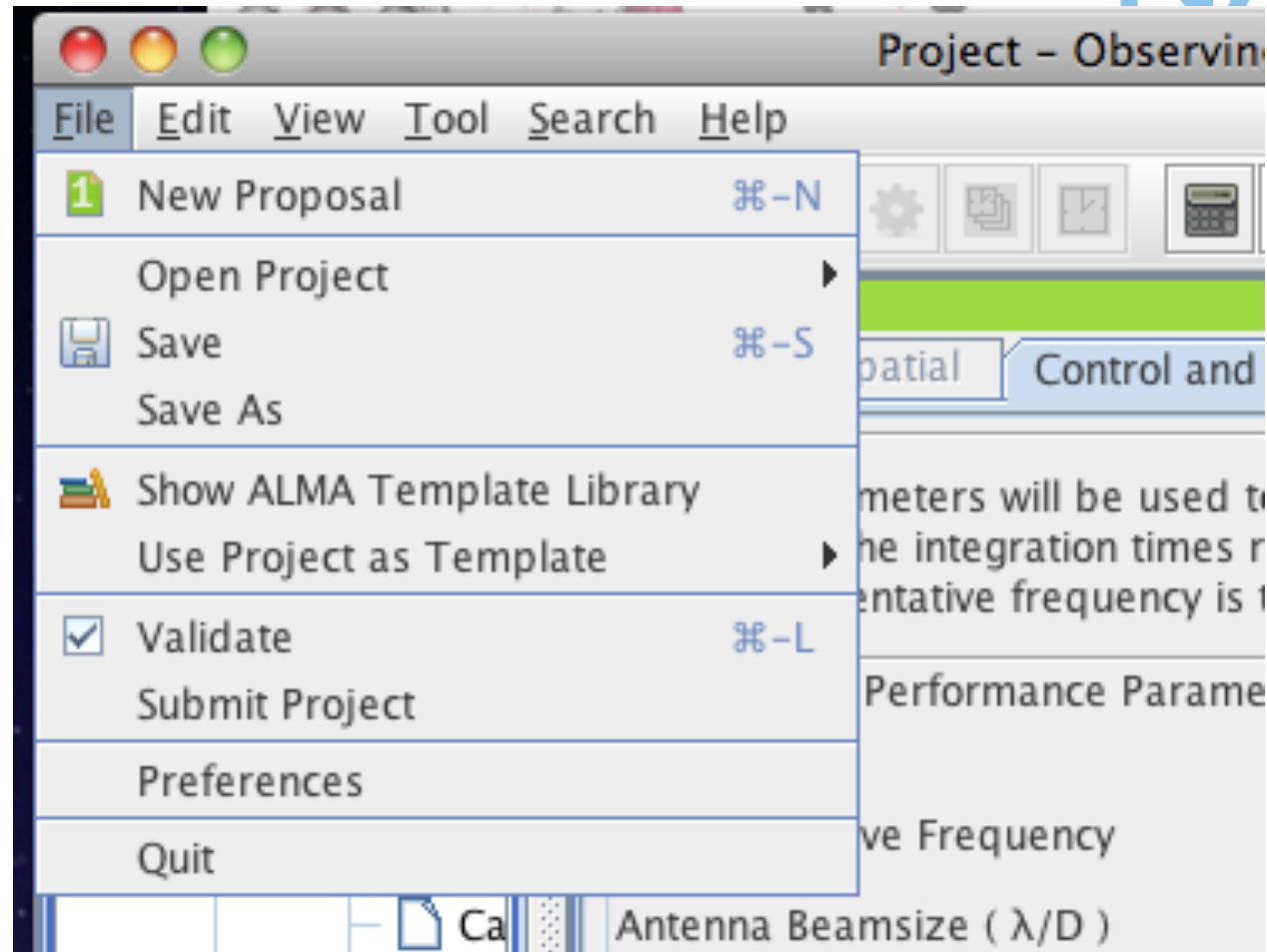
	12m Array		7m Array		Total Power Array	
Number of Antennas	16		0		1	
Resolution	1.00000	arcsec	17.956446 arcsec		44.891115 arcsec	
Sensitivity(rms)	38.00000	mJy	38.00000	mJy	38.00000	mJy
(equivalent to)	3.88784	K	0.01206	K	0.00125	K
Integration Time	4.49744	min	Infinity	d	1.16094	d

Integration Time Unit Option: Automatic

Buttons: Calculate Integration Time, Calculate Sensitivity, Close

ALMA with 16 x 12m antennas is very fast!

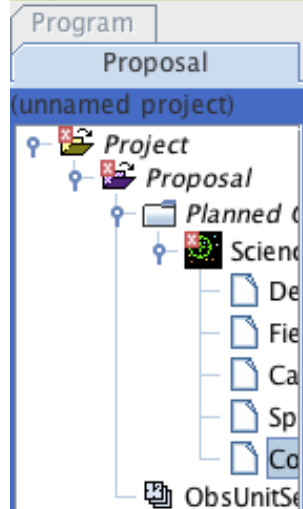
- BUT be aware that your UV-coverage may not be ideal – we recommend that you use simdata to check



File Edit View Tool Search Help



Project Structure



Editors

Spectral Spatial Control and Performance Parameters Catalog

These parameters will be used to determine the antenna configurations your observing requires, along with the integration times required.
The representative frequency is the frequency used to evaluate these performance targets.

Control and Performance Parameters

Representative Frequency GHz

Antenna Beamsize (λ/D) 12m arcsec 7m arcsec

Angular Resolution arcsec

Largest Scale arcsec

Feedback

Problems Information Log

12 errors, 0 warnings

	Description	Suggestion
✖	No Principal Investigator specified	Select the top level Project node in the tree and fill in the Principal
✖	No Project Name specified	Select the top level Project node in the tree and fill in the Project
✖	Abstract appears to be empty	Select the proposal node in the Proposal tab and edit your abstract
✖	No scientific category defined	Select Proposal node and set a scientific category
✖	No proposal type defined	Select Proposal node and set a proposal type
✖	No documents found - you must at least add a	Select the proposal node in the Proposal tab and add your

NAASC Tutorials & Community Events

Planned Tutorials:

- Jan 18, Victoria, BC
- Feb 10-11, Honolulu, HI
- Feb 24-25, Charlottesville, VA
- Mar 7, Philadelphia, PA
- Mar 11, Santa Fe, NM (New Horizons conference)
- Mar 15-16, Pasadena, CA
- Apr 18, Baltimore, MD
- Apr 20, Boston, MA
- Apr 26-27, Charlottesville, VA
- May 2-3, Gainesville, FL
- May 9-10, Iowa City, IOA
- May 9-10, Charlottesville, VA
- May 22-26, Boston, MA (AAS)
- May 27, NYC, NY