The ALMA Observing Tool in Cycle 5

Andy Biggs ALMA Regional Centre, ESO



Introduction

- New ALMA capabilities
 - Band 5
 - Polarization in Bands 4 and 5
 - 90-degree Walsh switching
- OT enhancements
 - New angular-resolution options
 - Overlaid lines are saved
 - Rest frequencies can be defined
 - Default spectral averaging (N=2)
 - Visual editors shown by default
 - New web-based Sensitivity Calculator
- Bug fixes



Lower Sideband is allowed to go into Band 4 – lowest frequency = 158 GHz Avoid increased noise in USB from H_2O line!



Can't define spectral windows (spw) in Band 4 (dark shading of LSB)

Image sidebands in Bands 9 and 10

Band 9 and 10 are Double Sideband (DSB) receivers – there is an "image" of every spw in the other sideband (reflected around LO1)

Image spws were previously suppressed by correlator, but 90-degree Walsh switching allows both to be recovered in Cycle 5



90-Degree Walsh switching

Used automatically for single continuum – bandwidth = 15 GHz!!! Must be activated manually for "Spectral Line"

Spectral T	уре				2
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			Produce image	e sidebands (Bands 9 and 10 only) 💽	
			Polarization pr	oducts desired 🔷 XX 🖲 DUAL 🔾 FULL	
Spectral S	etup Errors				
Spectral L	ine d=1				? -
Fraction	Centre Freq (rest,lsrk)	Centre Freq (sky,bar)	Transition	Bandwidth, Resolution (smoothed)	Spec Store Representative Avg. Image Window
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Add s	pectral window cen	tred on a spectral li	ne Add spe	ctral window manually Delete Show image spectral windows	

Default spectral averaging

All FDM spws will automatically use N=2 in Cycle 5 Degrades spectral resolution by only 15%, but halves data rate (max = 66 MB/s)

Spectral T	уре					
					Spectral Line	00
			Spectral Type		O Single Continuum	
					O Spectral Scan	
			Produce image	sidebands (Bands 9 and 10 (only) 💌	
			Polarization pr	oducts desired	🔾 XX 🖲 DUAL 🔾 FULL	
Spectral S	etup Errors					
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Baseban	d-1		2	2		
Fraction	Centre Freq (rest,lsrk)	Centre Freq (sky,bar)	Transition	Bandy	vidth, Resolution (smoothed)	Spec. Store Representative Avg. Image Window
1(Full)	1900.53690 GHz	633.48566 GHz	CII 2P3/2-2P1/2	1875.000 MHz(887 km/s)	1.129 MHz(0.534 km/s)	2
						Can set N=1
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1(Full)	1860.07821 GHz	620.00000 GHz	Test	1875.000 MHz(907 km/s)	1.129 MHz(0.546 km/s)	
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Angular-resolution interface

Two new options:

- `Range' short- (C43-1 to C43-6) or long-baseline (C43-7+) configurations only
- `Any' any `short-baseline' configuration LAS must be zero
- Stand-alone ACA no longer selected using angular resolution

Control and Performance						Г
Configuration Information						L
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Number of Antennas	12m 43		7m	10		TP 3
	ACA 7m c	configuration	Most con	npact 12m cor	nfiguration Mo	st extended 12m configuration
Longest baseline	0.049 km	n	0.161 km		16.197	km
Synthesized beamsize	5.640 ar	csec	1.508 arcs	sec	0.019 ar	csec
Shortest baseline	0.009 kn	n	0.015 km		0.256 kr	n
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Are the observations time-con	strained?	🔾 Yes 🖲 No)			

Angular-resolution interface

Three new options:

- `Range'
- `Any' any `short-baseline' configuration (C43-1 to C43-6)
- Stand-alone ACA no longer selected using angular resolution

Control and Performance Configuration Information				[2]
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Number of Antennas	12m 43	7m 10	TP 3	
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Shortest baseline	0.009 km	0.015 km	0.256 km	
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Angular-resolution interface

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List of possible configuration combinations is shown in the time-estimate dialogue

IMPORTANT!

Only those possibilities requiring the least number of configurations might be observed

e.g.

C43-1 C43-2 C43-3 and 7-m array

Overlaid lines



Overlaid lines are now saved and appear automatically when the project is re-opened

Rest frequencies

New panel on Spectral Scan node of Science Goal

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Rest frequencies



ALMA OT - Question

Do you want to add the overlay lines to the expected rest frequencies associated with the spectral windows?



Overlaid lines inside spws will be added automatically

Rest-frequency list can be edited using the Rest-frequency Spectral Line Picker

Transitions used to define spws are also added automatically

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Resubmission of previous proposals

It is no longer necessary to indicate if your proposal is a resubmission – the observatory will identify these automatically



New web-based Sensitivity Calculator

Previous NPAPI Java applet increasingly unsupported by browsers

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https://almascience.eso.org/proposing/sensitivity-calculator

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Known Issues page

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t Visited -	- News - Wiki - ALMA - ESO - Languages - APOD AOS Astro-ph YouTube eBay Das Wetter M94.5 MW		
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Cnown	Issues		
nown	Issues affecting the Cycle 5 release of the AI MA Observing Tool		
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he follo n updati	wing table lists those issues which are known to affect the Cycle-5 version of the Observing Tool. This will be update ted release.	d to denote whether an issue	has been fixed and whether this fix has made it in
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https://almascience.eso.org/proposing/observing-tool/documents-and-tools/cycle5/known-issues