



## What should I specify for "Largest Angular Structure in source" in the OT?

Imported User 55 - 2024-03-14 - ALMA Observing Tool (OT)

The **Largest Angular Structure** (LAS) of a source corresponds to the largest coherent structure in a source that needs to be imaged. This is a very important parameter for an interferometer as the shortest baselines set a limit on the largest scale that can be successfully imaged. This is because interferometers work as a "Fourier filter" - scales larger than can be detected by the shortest baselines are completely missing from the resultant image. The largest scale that can be successfully imaged by an interferometer is referred to as the Maximum Recoverable (angular) Scale (MRS) and is displayed by the OT for the smallest and largest 12-m configurations, as well as the 7-m ACA Array.

In the OT's Control & Performance editor, enter the **angular size of the largest feature** that you wish to recover with your proposed observations. In all cases, try and give a reasonable estimate for this parameter, even if it is not accurately known beforehand. The LAS will then be used by the OT to determine which array configurations are required to produce a good image of the source. The first 12-m configuration is chosen such that the requested angular resolution is achieved. If this configuration has baselines short enough to be able to image the requested LAS,  $MRS > LAS$ , then no more configurations will be added. If this is not the case, the OT will try and add other configurations (including the ACA) until the LAS is satisfactorily recovered.

Proposal Program > Spectral Spatial **Control and Performance**

Insubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Science Goal)
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance**
        - Technical Justification

These parameters are used to control various aspects of the observations, including the required antenna configurations and integration times.

Configuration Information

Antenna Beamsize ( $1.13 \cdot \lambda / D$ ) 12m 0.000 arcsec 7m 0.000 arcsec

Number of Antennas 12m 43 7m 10 TP 3

	ACA 7m configuration	Most compact 12m configuration	Most extended 12m configuration
Longest baseline	0.049 km	0.161 km	8.548 km
Synthesized beamsize	0.000 arcsec	0.000 arcsec	0.000 arcsec
Shortest baseline	0.009 km	0.015 km	0.113 km
Maximum recoverable scale	0.000 arcsec	0.000 arcsec	0.000 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam)  Single  Range  Any  Standalone ACA

0.00000 arcsec

Largest Angular Structure in source Undefined arcsec

Desired sensitivity per pointing 0.00000 Jy equivalent to Infinity K

Bandwidth used for Sensitivity RepWindowEffectiveChannelWidth Frequency Width 0.000000 GHz

Override OT's sensitivity-based time estimate (must be justified)  Yes  No

Science Goal Breakdown: time estimate, clustering, beam and configurations

Simultaneous 12-m and ACA observations  Yes  No

Are the observations time-constrained?  Yes  No

You can watch a video on Largest Angular Scale and Maximum Recoverable Scale at <https://science.nrao.edu/science/videos/largest-angular-scale-and-maximum-recoverable-scale> for further information on how these affect your ALMA proposal.