

Example: Proposed Observation, experimental Design and analysis plan

We propose extended array configuration SMA observations towards 2MASS J04124068+2438157 (hereafter: J0412). Our main goal is the spectral index analyses to examine whether or not the disks around the low-mass protostars harbor grown dust that may facilitate pebble accretion. The detailed observational setup and analyses plan are explained in the following:

Target sources and ancillary data. The previous ALMA Band-6 observation towards a very low-mass star J0412 shows a (disk) structure. Low-mass stars have a small number of objects whose protoplanetary disks can be observed. We have already submitted a SMA proposal to observe several low-mass stars. This object is suitable for observation in this time because the number of observations is still small.

Spectral setup. track-1 (replicate in case you need more than a track):

Array configuration: any

Required observing time in the target source loop: 60 min

receiver tuning (230/345): 204 GHz, LSB, s1

receiver tuning (240/400): 233 GHz, LSB, s1

target source (name, R.A., Decl., vlsr in km/s unit): J0412, 04:12:40.716, +24:38:15.327,0

If this is polarization track: No

Angular resolution The target diameter is 1.5 arcsec. The purpose of the observation is to measure the flux density accurately for SED study. So we do not need to resolve the target.

Observing time. In the previous ALMA observation, the total flux is about 7 mJy. The target has 1.5 arcsec diameter. Therefore, the target can be observed with two beams of SMA. The expected flux density is 3.5 mJy/beam. For the SED study, we need to accurately measure the total flux of the target, so we request observing time to achieve 5- σ SNR for the tuning. Therefore, we request one-hour of on-source time to achieve 0.7 mJy/beam.

Reference