

## 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  $5\text{-}\sigma$  SNR for the tuning. Therefore, we request one-hour of on-source time to achieve 0.7 mJy/beam.

## Reference