

## Thermal Continuum Observations of Planetesimal Regions with ALMA

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<http://www.nro.nao.ac.jp/alma/J/index.html>

Trans-Neptunian Objects (TNOs) are observable Kuiper Belt Objects, and they are believed to be remnants of planetesimals which was formed at the early stage of formation of our planetary system. On the other hand, debris disks are the extra solar Kuiper Belts, and they are thought to be composed of the fragment-dusts of planetesimals in the extra solar planetary systems. Due to their faintness, Both Kuiper Belts' physical properties are poorly known currently, although they can bring a direct clue of the formation of the planetary systems.

We propose thermal continuum observations of the TNOs and the debris disks. Flux measurements of the TNOs which are apparently small ( $\sim 10$ - $2$  arcsec.), cold ( $\sim 20$ - $50$ K) and detectable in mm $\sim$ sub-mm, allow us determinations of the effective diameters and albedos of planetesimals using high sensitivity such as the combined ALMA.

Continuum mappings of the debris disks give us to obtain the total mass of planetesimals disk and the extents of planetesimal regions (less than 1 arcmin.) with high fidelity tool for extended sources such as ACA. This study can make us link between observation and theory on formation of our/extra solar systems.