

Toward understanding origin of gas in debris disks

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Debris disks have optically thin dust components around main-sequence stars. We reduced ALMA archival data of the debris disk candidates and derived the dust and gas mass assuming the ISM abundance of $\text{CO}/\text{H}_2=10^{-4}$. From the result, we found a good correlation between dust mass and age of the central star: dust masses decrease with age of central stars. We expected the similar trend that gas masses decrease with the age, but found no trend between them. We thus concluded the ISM abundance is not a good assumption to derive H_2 mass for debris disks. In addition, recently, we have firstly detected [C I] emissions in the gaseous debris disks of 49 Ceti and β Pictoris with the ASTE. If C/CO ratio can be obtained by observations, there is a possibility to estimate the amount of H_2 using the chemical reaction of CO.

Keywords: debris disk, ALMA, ASTE