



The Onset of Planet Formation in Young Protostellar Disks

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Planets form in disks of dust and gas around young stars, where the growth of the dust grains are the first steps in the planet formation process. Constraining the sizes of grain grains and the conditions under which grain growth is favourable has been challenging in part because there has been a lack of observational tests that can be used to infer grain sizes in disks. Fortunately, dust polarization from self-scattering processes offers a new opportunity to constrain grain sizes in young disks, and thanks to the development of high resolution polarization capabilities, such observations are now possible. In this presentation, I will present an overview of the polarized self-scattering process and how it can be used to infer dust grain properties in disks. I will also highlight recent observational studies that have detected polarized self-scattering in young disks from ALMA and the VLA and the implications of these signatures for dust grain growth at early times (< 0.5 Myr). I will also discuss why some young disks do not show this polarization signatures and how we can still use these non-detections to study dust grain growth as the building blocks for planet formation.

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