

## ASTROPHYSICS SEMINAR

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# Childhood to Adolescence: Dust and Gas Clearing in Protoplanetary Disks

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**Abstract.** The evolutionary processes transforming massive, gas-rich circumstellar disks into tenuous, gas-poor debris disks are still not well understood. During this crucial interval, planet(esimal)s form and the remaining disk material is accreted or dispersed. Mid-infrared spectrophotometry of proto-planetary disks have revealed a small sub-class of objects with spectral energy distributions (SEDs) that suggest the presence of large inner gaps with low dust content, often interpreted as a signature of young planets. However, SEDs are notoriously difficult to interpret as multiple physical scenarios can result in the same SED. We present some of the first direct evidence supporting the gap hypothesis in the form of SMA 880 micron continuum maps resolving inner disk holes. The holes, first discovered through mid-IR spectroscopy, have radii in the 20-50 AU range and are in excellent agreement with predictions from SED modeling. However, despite the dust depletion, high resolution spectra from Keck NIRSPEC and VLT CRIRES reveal that CO gas is often present in the inner disk regions. In combination with modeling, these spatially resolved data help constrain the evolutionary processes active in these unusual disks.

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### Additional Information

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The seminars are given in the ISDC "Pavillon" building  
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