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Resolving the Gapped Structure in Pre-transitional Disks with Multi-wavelength Interferometry

Pre-transitional & transitional disks are protoplanetary disks with a gapped or dust-cleared inner disk structure, potentially revealing the gravitational influence of young planets. Besides planet-disk interaction, several alternative disk clearing scenarios have been proposed, including grain growth, magnetorotational instabilities, photoevaporation, and truncation by close-in companions. In order to obtain new insights into the structure of these disks and their clearing mechanism, we combine near- and mid-infrared interferometry from various facilities, including the VLT Interferometer, the Keck Interferometer, and Gemini speckle interferometry. This multi-wavelength approach enables us to trace material at different temperatures (200-2000 K) and over a wide range of stellocentric radii, resulting in tight constraints on the inner disk radius, the gap geometry, and the presence of optically thin material located within the gap. In this talk, I will review our approach and present some early results.