Disks around young stars: new VLTI results

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Disk evolution is one of the most interesting aspect of disk studies. Disks evolve in time by losing matter, from an early stage, close to the end of the collapse of the core from which the star forms, to the time when the disk disappears. Many processes contribute to the disk "death"; from accretion of matter onto the star, to the photoevaporation due to the radiation field of the central star or of a nearby massive object, tidal interactions, or planet formation. Most of these processes occur in the inner disk, within few AU at most from the central star.

An important step forward has come from the wealth of data provided by Spitzer on the spectral energy distribution of a large number of disks in nearby star-forming regions, which seem to indicate that disk evolution starts from the region closest to the star. However, spatially integrated information, such as the spectral energy distribution, is often ambiguous, and one needs to resolve the emission of the inner disk regions.

Direct observations, which spatially resolve the emission in the continuum and in the lines, can only be obtained through optical and near-IR interferometry. In this talk, I will present the most recent data obtained with Amber at VLTI on some disks and discuss their interpretation in the context of disk evolution. In particolar, I will focus on the intermediate-mass young star HD163296, for which we obtained more than 2000 Amber observations of the continuum emission, which represents a breakthrough in quantity and quality of interferometry data for objects of this kind. We propose that the HD163296 disk has an inner region of AU size which contains only a small amount of gas and dust; within this region, very refractory grains survive close to the star and accounts for the near-IR emission seen with Amber. If so, we may be observing the disk of HD 163296 in the process of clearing the inner gaps seen by Spitzer in many T Tauri star disks.