

Imaging Inner Disk Structures: NACO and NICMOS Observations

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Our knowledge of disk structure and planetary signatures is limited by the huge contrast difference between the bright central star and the much fainter disk. Special observing techniques are necessary to reach the inner disk, where planet formation is believed to take place. I present results from applying the novel polarimetric differential imaging technique to disks around nearby young stars, such as TW Hya. This technique, in combination with the high-quality adaptive optics system NACO on the VLT, is able to cancel out the non-polarized light and thus achieve an unprecedented contrast for disk observations. Our data traces the scattered light as close as 0.1" from the star, corresponding to about 6 AU, i.e. the size of our inner Solar System. In addition to this special technique, I will present results of further adaptive optics and HST/NICMOS imagery of young circumstellar disks. In the most exciting, ongoing NICMOS study we identify a faint, red point source embedded in the disk of a very low-mass star. We discuss the nature of this particular object to demonstrate the potential of the upcoming high-contrast imaging techniques.

