

The structure of HD100546's self-shadowed circumstellar disk

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Scientific Category: ISM AND CIRCUMSTELLAR MATTER

Scientific Keywords: DYNAMICS, PROTO-PLANETARY DISKS, YOUNG STARS AND
PROTOSTELLAR OBJECTS, RADIATIVE TRANSFER

Total Budget Amount: \$38,000

Abstract

HD100546 presents a unique opportunity to constrain the vertical structure of a 10Myr old circumstellar disk. The infrared spectral energy distribution (SED), peaking in the mid-infrared, implies that almost half of the star light is absorbed by a puffed up inner disk at about 10 AU that shadows the outer disk. Spiral structure in the outer disk at 200 AU is most likely caused by the shadow of the inner disk projected onto a warped outer disk. We propose to simultaneously model both the infrared SED and the scattered light multi-band images observed with the ACS coronagraph. This work will provide unique constraints on both inner and outer disk structure, including on the angular structure of the inner disk and on the geometry of the outer disk. The vertical disk structure is particularly interesting as at 10 Myr, HD100546's disk is likely to contain and be forming planetesimals and planetary embryos. The disk geometry and azimuthal structure will provide information on the mass distribution and so on planetesimals and planets residing in this system.

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