

Infall and the Accretion Shock in the Protostellar Disk: L1157

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We present high spatial resolution 1mm observations of methanol and continuum dust emission in the disk surrounding the young, Class 0 protostellar object L1157. We detect spatially resolved methanol emission, in the $5_0 - 4_0$ (A) transition, in the OVRO-MMA maps obtained with a synthesized beam of $1''$. The structure and kinematics of the methanol emission suggest that the gas we are observing is tracing a warm layer in the infall-disk interface, consistent with an accretion shock. This first observational evidence for accretion shocks in protostellar disks, confirms an important prediction of theoretical models of infalling material feeding the growth of protostellar disks.

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