

P101a      **Centrifugal Barrier of Infalling-Rotating Envelope around the Class I Protostar IRAS 04365+2535**

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Sub-arcsecond images of the rotational line emission of CCH, CS, and SO have been obtained toward the Class I protostar IRAS 04365+2535 in TMC-1A with ALMA. A compact component around the protostar is clearly detected in the CS and SO emission, while an extended envelope is seen in the CCH and CS emission. The velocity structure of the compact component of CS reveals infalling-rotating motion conserving the angular momentum. A centrifugal barrier of the infalling-rotating envelope is identified at the radius of  $50 \pm 10$  AU. The observed velocity structure is well explained by a ballistic model of an infalling-rotating envelope, although the distribution of the infalling gas is not totally symmetric around the protostar. With the aid of the model, the mass of the protostar and the inclination angle of the disk ( $0^\circ$  for edge-on) are evaluated to be  $0.25 M_\odot$  and  $-20^\circ$ , respectively. The distribution of SO is mostly concentrated at the radius of the centrifugal barrier, although it also shows asymmetry around the protostar. This result clearly demonstrates that the centrifugal barrier of the infalling-rotating envelope exists even in the Class I source and that it causes drastic change in chemical composition of the gas infalling onto the protostar.