

P122a **Vertical Structure of the Transition Zone from Infalling Rotating Envelope to Disk in the Class 0 Protostar, IRAS04368+2557**

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Formation of the disk structure is an important issue for star formation studies. In the ALMA Cycle 0 observation toward L1527, we discovered the centrifugal barrier of the infalling-rotating envelope (IRE), and demonstrated a drastic chemical change associated with it. It is generally thought that the disk radius is close to the centrifugal radius (r_{CR}), where the gravitational force is balanced with the centrifugal force. However, this expectation is too simplistic. The envelope gas, at least a fraction of it, keeps infalling to the centrifugal barrier (r_{CB}) in L1527. Such a feature of the transition from the IRE to the disk is totally unexpected, and is one of the breakthroughs brought by the high resolution molecular line observations with ALMA. On the other hand, the radial thickness of the shocked region in front of the centrifugal barrier and the height of the IRE around the centrifugal barrier have not been resolved. With this motivation, we conducted very high-resolution (~ 20 AU) observations with ALMA Cycle 2. The drastic chemical change around r_{CB} is confirmed, and the vertical structure of the IRE is clearly revealed. The IRE shows highly flattened distribution beyond the radius of 160 AU (smaller than r_{CR} of 200 AU), reflecting the almost edge-on configuration, while it is significantly broadened between r_{CB} (100 AU) and 160 AU. A change in the physical structure of the IRE is indeed found in front of the centrifugal barrier, as we reported it by the chemical change.