Early Planet Formation in Embedded Disks (eDisk): A first high-resolution view of molecular line emission toward the Class 0 protostar L1527 IRS + Formation in Emp

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L1527 is a 1.3 L_{sun} [1] **Class 0 protostar** in Taurus (140 pc [2,3]), harboring a ~100au[4,5,6] edge-on (85°[7]) disk.

High-resolution (0.17") observations from the ALMA Large Program eDisk confirm a stellar mass of ~0.5 M_{sun}, as well as reveal evidence of a disk wind and a temperature increase at the disk-envelope interface [6].



Inner envelope





Position-velocity diagrams along the minor axis, 0.6" (85 au) north of source. C¹⁸O traces the Keplerian disk, while ¹²CO displays super-Keplerian velocities indicative of a disk wind.







Brightness temperature of optically thick ¹³CO emission (left) and the temperature derived from the H₂CO $3_{0.3}$ - $2_{0.2}/3_{2.2}$ - $2_{2.1}$ line ratio (right) for a redshifted (top) and blueshifted (bottom) velocity channel. Both measurements show a temperature enhancement along the midplane near the disk-envelope interface.





Asymmetries along the minor axis (due to optically thick dust) and the major axis. See also [8,9].

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