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The Highly Collimated SiO Protostellar Jet from the Class 0 Protostar HH212

HH212 is a nearby protostellar jet driven by a Class 0 protostar (IRAS 05413–0104), exhibiting a symmetric structure with knots. The Atacama Large Millimeter/submillimeter Array (ALMA) has observed the SiO $J = 16-15$ line in Band 9 with a resolution of $0.088'' \times 0.067''$, and the $J = 8-7$ line in Band 7 with a higher resolution of $0.022'' \times 0.020''$. By comparing the intensities of the two lines—after convolving them to the same resolution—it is possible to estimate the average temperature and density of the collimated jets. Assuming uniform physical conditions, a simple model is developed to describe the jets and to compare with the observed line ratios. This approach provides relatively direct insights into the physical properties of the inner jets, offering a deeper understanding of the innermost structures of a protostellar system.

Section

Star Formation

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