244.10 – Outflow-protostar interactions in the Serpens South Cluster

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Crowded, stellar cluster-forming regions should result in interactions between outflows from young stars and nearby cluster members. These interactions will play an important role in the mass accretion of cluster members, and thus influence the evolution of young stellar objects in the cluster. We present molecular line and dust continuum observations of the dense, young star-forming cluster Serpens South which show clear evidence for the interaction between a jet-like outflow and a nearby young star.

244.11 – The Structure of Dense Gas in Perseus and Serpens: CLASSy Results

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We present results of a dendrogram analysis of N2H+ J=1-0 data cubes from the CARMA Large Area Star-formation Survey (CLASSy). Dendrogram tree structures are characterized by their morphology and kinematics relative to one another, and provide a useful mechanism for analyzing the hierarchy of molecular regions from core-to-cloud spatial scales. Our CARMA data, with 7" spatial and 0.15 km/sec velocity resolution, yield the following results: (1) trees are more hierarchical in regions of high star formation activity; (2) in all regions, the leaf and branch morphology is widely varying and mostly not circularly symmetric; (3) there is evidence for multiple velocity components along a line of sight in only a small fraction of the mapped areas. We compare the identified N2H+ dendrogram tree structures to Herschel maps of dust emission and to Spitzer-identified young stellar object distributions to compare the dense gas distribution to the current star formation activity.

244.12 – Analysis of the Serpens South Filamentary Cloud: CLASSy Results

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We present a study of the Serpens South cloud, which is part of the CARMA Large Area Star-formation Survey (CLASSy) project. We observed a 210 square arcminute area of the Serpens South region, mapped at 7? resolution using the CARMA 23-dish mode in the HCN, HCO^+, and N_2H^+ J=1-0 emission lines. The CARMA 23-dish mode combines simultaneous interferometric data from the 3.5 m, 6.1 m, and 10 m antennas and autocorrelation spectra from the 10-m antennas to reconstruct full spatial images of the molecular emission lines, tracing the structures from the large to small scales to better understand how clouds evolve to form stars. Serpens South is thought to be a very young star-forming region (a few 10^5 yr) with a central cluster of protostars lying at the origin of a radial filamentary structure. The CLASSy images allow us to analyze in detail the spatial structure and gas kinematics of the central hub and the substructure of the filaments. The northern ~1 pc filament is clearly resolved into a more collimated strips of gas. Its connection with the central hub is not physically as clear as the connection of the southwestern and southeast filaments. These filaments are also resolved into several collimated structures, many of which are also velocity separated given the high-spectral resolution of the CLASSy data (0.15 km/s).

244.13 – Infall as a Function of Position and Molecular Tracer in L1544 and L694

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