

## [☞SF-07] CO J=2-1 Observations toward the dust clumps in Perseus molecular cloud

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The Perseus Molecular Cloud is one of the famous nearby star forming cloud in the Galaxy. It has several dense core regions, IC348, B5, B1, B3 and a ringlike structure L1455, L1448, and NGC1333. And recent research with SCUBA found over hundred submillimeter cores at these regions. These could be either protostellar or starless. We observed 174 cores in 12CO J=2-1 transition with Seoul Radio Astronomy Observatory(SRAO) 6m telescope, and found 121 outflow figures in spectrum.

We derive outflow properties and compare them with SED of the embedded YSOs. Expecting its embedded protostar by outflow, we also make a comparison of SEDs with outflow conditions, so that we find relations between degree of evolution and outflow conditions.

We also derive physical parameters of cores and outflow material using the 12CO 2-1 data and other data sets of 12CO 1-0, 3-2 and 13CO J=2-1.

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## [☞SF-08] Radio Imaging of the Serpens SMM 1 Protobinary System

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Serpens SMM 1 is a Class 0 young stellar object. SMM 1 is very bright in radio and has been considered a single low-mass protostar. However, there were some indications of complexity, such as the near-IR excess and multiple outflows. The Serpens SMM 1 region was observed in the 6.9 mm continuum using the Very Large Array. SMM 1 was resolved into two sources having steep positive spectra suggesting emission from dust. The stronger one, SMM 1a, is the protostar driving the bipolar radio jet known previously. The newly found source, SMM 1b, seems to be yet another young stellar object. Therefore, SMM 1 is a protobinary system with a projected separation of 1.8 arcsec or 470 AU. While SMM 1a is brighter in radio, SMM 1b is brighter in infrared, which implies that SMM 1b is less deeply embedded than SMM 1a. SMM 1b is a probable driving source of a molecular hydrogen jet.