

Poster: The evolutionary status of methanol maser sources

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Emitting strongly at 6.7GHz, class II methanol masers are exclusively associated with sites of high-mass star formation. The methanol masers are pumped by warm dust emission from a high mass protostellar object, yet the relationship between the properties of the observed maser emission and the young stellar objects hosting them remains relatively poorly understood. The Methanol MultiBeam Survey (MMB; Green et al 2009, 2017) provides a sample of over 1000 methanol masers from an unbiased survey of the Galactic plane up to longitude 60 degrees. The compact source catalogues produced from the Herschel infrared Galactic plane survey (Hi-GAL) provide a complementary data set at far-infrared wavelengths to identify the host star-forming clumps in dust emission. Fitting to the far-infrared spectral energy distributions of the maser host clumps allows a comparison to existing catalogues of the general Galactic population of massive protostellar clumps, in order to place the methanol maser phase in the evolutionary sequence of high-mass star formation and determine the clump properties required to sustain a methanol maser. The fraction of protostellar clumps falling within this determined parameter space but lacking a maser detection in turn constrains the population of as yet undetected maser sources. We then compare the clump properties to the characteristics of the maser emission at 6.7GHz, before investigating the differences between host clumps also associated with other maser lines.

Cores and embedded objects