

Poster: The SOFIA Massive (SOMA) Star Formation Survey - Tests of Massive Star Formation Theories

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We present an overview and latest results of the SOFIA Massive (SOMA) star formation survey, which aims to build up a sample of ~ 50 massive and intermediate-mass protostars in a range of different environments that are observed across MIR and FIR bands to test theoretical models of massive star formation. We present multi-wavelength images which reveal outflow cavities and characteristic extinction patterns, and build the spectral energy distributions (SEDs) of massive and intermediate-mass protostars observed with SOFIA-FORCAST from ~ 10 to $40 \mu\text{m}$ together with archival Spitzer and Herschel data and other ground-based IR data. Radiation transfer (RT) models of Zhang & Tan 2018, which are based on the Core Accretion scenario, including outflow cavities driven by MHD disk winds, are then fit to the SEDs and yield key properties of the protostars. The first results are published in De Buizer et al. 2017. Our next 8 most luminous sources spans a luminosity range of $10^4 - 10^6 L_{\odot}$ in more diverse environments, generally representing a more massive and evolved sample. The SED fitting implies the sources have protostellar masses $\sim 2 - 64 M_{\odot}$ accreting at $10^{-4} - 10^{-3} M_{\odot} \text{ yr}^{-1}$ inside cores of initial masses $\sim 10 - 500 M_{\odot}$ embedded in clumps with mass surface densities $\sim 0.1 - 3 \text{ g cm}^{-2}$.

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