## P128b A SED Model Grid for Massive Star Formation

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We present a continuum radiative transfer model grid that can be used for fitting observed spectral energy distributions (SEDs) of massive protostars. The model grid is based on the core accretion theory of massive star formation, that is, a massive star forms by accreting from a preassembled gravitationally bound core, similar to the low-mass star formation. Designed for massive star formation, the initial conditions of our models are dense and massive cores embedded in high surface density environments. We then include the evolutions of the protostar, infalling envelope, accretion disk, and outflow cavity in a self-consistent way, and link these components to the initial and environmental conditions. The current model grid contains about $10^4$ SEDs with 4 free parameters (initial core mass, surface density of the star forming environment, protostellar mass, and inclination). Compared with other SED model grids currently used for massive star formation studies, our model grid yields similar levels of fitting goodness with a smaller number of free parameters. The fitted parameters are also more physically consistent with each other and more realistic for massive star formation. With a large observational sample, it will help to understand the effects of the different initial and environmental conditions on the IR appearance of the sources, and in the end test the core accretion theory of massive star formation. We are also extending this model grid to include line radiative transfer and chemical modeling.