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Question: Other

A Generalized Software Package for Characterizing Multi-Wavelength Surveys in the ALMA Era

We present a novel simulation and fitting program which employs MCMC to constrain the spectral energy distribution makeup and luminosity function evolution required to produce a given mutli-wavelength survey. This tool employs a multidimensional color-color diagnostic to determine goodness of fit, and simulates observational sources of error such as flux-limits and instrumental noise. Our goals in designing this tool were to a) use it to study Infrared surveys and test SED template models, and b) create it in such a way as to make it usable in any electromagnetic regime for any class of sources to which any luminosity functional form can be prescribed.

I will discuss our specific use of the program to characterize a survey from the Herschel SPIRE HerMES catalog, including implications for our luminosity function and SED models. I will also briefly discuss the ways we envision using it for simulation and application to other surveys, and I will demonstrate the degree to which its reusability can serve to enrich a wide range of analyses. I will further discuss use cases with ALMA, and present preliminary examples of the enhanced capability this program, coupled with ALMA's resolving power, can bring to the constraint of the luminosity function in this regime.