MADHAT: a tool for constraining dark matter annihilation in dwarf galaxies[1] PEARL SANDICK, University of Utah — We present a brief overview of the Model-Agnostic Dark Halo Analysis Tool (`MADHAT`), a numerical tool that implements a Fermi-LAT data-driven, model-independent analysis of gamma-ray emission from dwarf satellite galaxies and dwarf galaxy candidates due to dark matter annihilation, dark matter decay, or other nonstandard or unknown astrophysics. This tool efficiently provides statistical upper bounds on the number of observed photons in excess of the number expected, based on empirical determinations of foregrounds and backgrounds, using a stacked analysis of any selected set of dwarf targets. It also calculates the resulting bounds on the properties of dark matter under any assumptions the user makes regarding dark sector particle physics or astrophysics. The methodology and implementation of MADHAT will be discussed, as well as an example of its utility.

Pearl Sandick
University of Utah

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