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MADderHAT: Weighting the Model-Agnostic Dark Halo Analysis Tool ZACHARY CARTER, University of Utah, JASON KUMAR, University of Hawaii at Mnoa, PEARL SANDICK, University of Utah — MADHAT (Model-Agnostic Dark Halo Analysis Tool) is a computational tool that processes data from Fermi Gamma-ray Space Telescope observations of dwarf galaxies and dwarf-like objects. MADHAT calculates the probability that some number of photons from each target object could be coming from non-standard astrophysics, including dark matter, and produces bounds on dark matter properties, such as the annihilation cross section and the decay rate. Unlike the majority of similar analyses, the bulk of MADHAT's analysis is model-independent. That is, MADHAT can be used to constrain the number of dark-matter-produced photons coming from a set of dwarf galaxies for any model of dark matter particle physics or astrophysics, including models of the more exotic variety. MADHAT version 1.0 weights all photons equally, irrespective of the sky region from which they come. Here, I report on progress implementing photon weights based on the dark matter and background expectations for each target object, which will improve sensitivity to dark matter models.

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