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Fermi LAT Collaboration Update on Dark Matter Gamma–ray Line Search[1] ELLIOTT BLOOM, KIPAC-SLAC, Stanford University, ANDREA ALBERT, Ohio State University, ERIC CHARLES, ARTHUR SNYDER, KIPAC-SLAC, Stanford University, FERMI-LAT COLLABORATION[2] — A number of studies of publicly available data from the Fermi Large Area Telescope (LAT) have presented indications of a narrow spectral feature at 130 GeV in the direction of the center of the Milky Way. We present an update of results from the Fermi –LAT Collaboration on our gamma –ray line search, including recent results in the region of 130 GeV. Our analysis searches for spectral lines from 5 GeV to 500 GeV using 4 years of Fermi-LAT data. We parameterize the energy redistribution [or resolution] function of the LAT as a two-dimensional probability distribution function that incorporates the quality of the gamma-ray energy measurement. In addition, given the many uncertainties associated with the Galactic dark matter density distribution, we search in several different selection regions on the sky optimized for various dark matter density profiles. Our results include 95% CL limits on the presence of gamma-ray lines as well as studies of systematic uncertainties and an evaluation of the robustness of the analysis method.

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