

Abstract Submitted
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Gamma Ray Analysis of the Most Energetic Blazars to Probe the Cosmos¹ NATHAN NGUYEN, YASHIKA BATRA , JE-WON IM, University of California, Santa Cruz — Proper measurements of the Extragalactic Background Light (EBL), the radiation field of all infrared to light emitted in the Universe since reionization, are key to understanding the cosmic makeup and evolution of the universe. However, its direct measurement is difficult due to bright foreground emissions. An alternative method is to indirectly probe the EBL from its interaction with gamma rays emitted by blazars. The Fermi-LAT and H.E.S.S collaborations proposed using a scaling factor alpha to normalize EBL density based on a previously existing model. However, numerous “problematic” sources that deviate more than a discrepancy of 3 sigma from an EBL model were present in Fermi-LAT’s 4FGL-DR2 catalog, which contained 10 years of data. We performed a new gamma ray analysis on 12 years of Fermi-LAT observations, focusing on “problematic” and bright sources. The changes on the scaling factor alpha derived from our analysis resolve the issue for most of the “problematic sources”, while creating a new outlier from our “bright sources” sample. By estimating the factor alpha for a large number of blazars observed by the Fermi Large Area Telescope (Fermi-LAT), this study will contribute to the creation of a map of the density of the EBL.

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