

The Impact of Gamma-ray Halos on the Angular Anisotropy of the Extragalactic Gamma-ray Background

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The study of the development of electromagnetic cascades in intergalactic magnetic fields (IGMF) serves as a robust probe into the strength and structure of these magnetic fields. Charged particles in electromagnetic cascades are deflected by magnetic fields giving rise to gamma-ray halos around extragalactic sources of VHE gamma rays (e.g., BL Lacertae-type objects). Such gamma-ray halos can have a profound impact on the intensity and angular properties of the contribution of extragalactic VHE sources to the extragalactic gamma-ray background (EGB) as measured by the Fermi-LAT at GeV energies. We demonstrate the impact of the deflection of cascades by the IGMF on the collective spectrum of extragalactic VHE sources, as well as the impact on the angular anisotropy of the EGB as a function of energy.

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