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Propagation of VHE Gamma Rays in Extragalactic Media TIMOTHY ARLEN, VLADIMIR VASSILIEV, YUSEF SHAFI, STEPHEN FEGAN, UCLA — Very High Energy (VHE) gamma rays (E¿100 GeV) emitted from the blazar class of AGN interact with the diffuse far-IR to UV extragalactic background light (EBL) in intergalactic space, producing an electron-positron pair. These leptons, deflected by the intergalactic magnetic field (IGMF) in turn inverse Compton scatter CMB photons, rapidly radiating away their energy and producing a cascade of GeV-TeV photons which can then be observed by ground-based imaging atmospheric Cherenkov telescopes (IACTs) such as VERITAS and space based instruments like the FERMI Gamma Ray Space Telescope. By modeling the change in blazar spectra due to absorption on the EBL and subsequent bending of electron/positron pairs by the magnetic field, it may be possible to provide limits on parameters of the currently poorly understood IGMF, as well as constraints on the EBL spectral energy density in the far-IR to UV region. Results of computer simulations of cascading in intergalactic space which utilizes the fully relativistic description of both Pair Production and inverse Compton scattering in the expanding universe will be presented.

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