

Multi-zone model as origin of hard gamma-rays spectrum in extreme BL Lacs

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The emission of the so-called extreme blazars challenges the particle acceleration models. The hardness of its spectrum, < 2 , demands extreme parameters using the standard one-zone SSC model in the high energy band. Some authors use both two-zone or hadronic/leptohadronic models to relax these extreme values. In this work, we present a leptohadronic multi-zone model to explain the broadband emission, where the contribution of two components forms the hard-spectrum in the γ -rays band. The first is produced by the photopion process, where accelerated protons in an inner blob located close to the core interact with the X-ray photons coming from a pair plasma. This mechanism will be responsible for γ -rays in the TeV's energies range. The second component is produced by an outer blob, which corresponds to the source of X-rays and γ -rays via the standard SSC model. Additionally, neutrinos with $\sim$ TeV's energies are expected and could be restricted by IceCube's observations.

Keywords

Blazar emission; gamma rays; Cosmic Rays; Astrophysical Neutrinos.

Collaboration

other Collaboration

Subcategory

Theoretical Results

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