



Contribution ID: 75

Type: Oral Presentation

Compton-induced cascade γ -rays in the radio galaxy NGC 1275

Among the active galactic nuclei (AGNi), blazars are the brightest emitters of high- (HE, $E \geq 100$ MeV) to very-high-energy (VHE, $E \geq 100$ GeV) γ -rays from their jets. Radio galaxies, being the misaligned parent population of the blazar class, were historically not observed at these frequencies. However, there is a growing number of radio galaxies detected in HE–VHE γ -rays in recent years. In this work, we leverage and refine a Monte-Carlo photon and electron-positron (e^\pm) tracking code in the AGN environment of the radio galaxy NGC 1275. In the code, we consider the isotropic broad emission line and Shakura-Sunyaev (SS) accretion disk radiation fields, with mild magnetic fields in the AGN environment. We find that cascade γ -rays from the inverse-Compton scattering by relativistic e^\pm pairs of these external radiation fields can explain the \emph{Fermi} Large Area Telescope's (LAT) observation of the radio galaxy NGC 1275. We present a set of parameters obtained from the code and fit the source's spectral energy distribution during the flaring events recorded in December 2022 and January 2023.

Apply for student award at which level:

None

Consent on use of personal information: Abstract Submission

Yes, I ACCEPT

Primary author: MFUPHI, Ntshatsha

Co-authors: Prof. BOETTCHER, Markus (North-West University); Prof. RAZZAQUE, Soebur (University of Johannesburg)

Presenter: MFUPHI, Ntshatsha

Session Classification: Astrophysics & Space Science

Track Classification: Track D1 - Astrophysics