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Exploring the Emission Mechanisms of Mrk 180 with long term X-ray and Gamma-ray data

Markarian (Mrk) 180 is a BL Lacertae (BL Lac) object located at a redshift of 0.045 and a potential candidate for high-energy cosmic ray acceleration.

We have analyzed the Fermi-LAT gamma-ray data of Mrk 180 collected over a period of 12.8 years. We have also analyzed Swift X-ray, ultraviolet & optical, and XMM-Newton X-ray data to construct the multi-wavelength SED. The SED has been modelled with one-zone pure leptonic and lepto-hadronic scenarios to explain the underlying physics of multi-wavelength emission. We have done a comparative study between these pure leptonic and lepto-hadronic models. Moreover, an earlier study has associated Mrk 180 with the Telescope Array (TA) hotspot of UHECRs at $E > 57$ EeV motivates us to check whether ultrahigh energy protons and iron nuclei can reach the earth from Mrk 180. In this poster, I shall give an overview of our work on this source.

Summary

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