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# Exploring the High-Energy Gamma-Ray Spectra of TeV Blazars

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The highest-energy blazars exhibit non-thermal radiation extending beyond 1 TeV with high luminosities and strong variabilities, indicating extreme particle acceleration in their relativistic jets. The gamma-ray spectra of blazars contain information about the distribution and cooling processes of high-energy particles in jets, the extragalactic background light between the source and the observer, and potentially, the environment of the gamma-ray emitting region and exotic physics that modifies the opacity of the universe to gamma rays. We use data from Fermi-LAT and VERITAS to study the variability and spectra of a sample of TeV blazars across a wide range of gamma-ray energies, taking advantage of more than ten years of data from both instruments. The variability in both GeV and TeV gamma-ray bands is investigated using a Bayesian blocks method to identify periods with a steady flux, during which the average gamma-ray spectra, after correcting for the pair absorption effect from propagation, can be parameterized without the risk of mixing different flux states. We report on the search for intrinsic spectral curvature and spectral variability in these blazars, in an effort to understand the physical mechanisms behind the high-energy gamma-ray spectra of TeV blazars.

## Keywords

AGN: jets; AGN: variability; Particle acceleration; Gamma rays

## Collaboration

VERITAS

## other Collaboration

## Subcategory

Experimental Results

**Primary authors:** Dr FENG, Qi (Barnard College / Columbia University); FOR THE VERITAS COLLABORATION

**Presenter:** Dr FENG, Qi (Barnard College / Columbia University)

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