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Variability study of extreme blazars with VERITAS

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The VERITAS array of imaging atmospheric Cherenkov telescopes has collected nearly 5000 hours of active galactic nuclei (AGN) observations. It has detected 39 very-high-energy (VHE, >100 GeV) AGNs at redshifts up to z = 0.9, of which 24 are classified as high-frequency-peaked BL Lacertae objects (HBLs). VERITAS has obtained an extensive dataset of HBL and extreme HBL (xHBL) observations, with light-curves spanning up to 11 years, allowing the characterization of their long-term and short-term variability. The results of ~56 hours of 1ES 0033+595 observations are reported, including an estimate of its redshift and a multi-wavelength spectral analysis, confirming its classification as an xHBL. A study of the variability of 1ES 0033+595 and various other xHBLs/HBLs in the VERITAS dataset is presented and the correlation with other energy bands is tested. In particular, the short-term variability of xHBLs as a function of energy in the VHE band is examined. The study explores the presence of secondary gamma rays produced in cosmic-ray interactions with background photons.

Are you presenting on behalf of collaborations or institutions?

Yes, on behalf of VERITAS

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