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The gamma-ray properties of a sample of low-redshift BL Lacs

With its discovery and characterization of several hundred sources, Fermi-LAT has revolutionized our knowledge and understanding of the BL Lac population with respect to other AGNs. The multi-wavelength picture has however not kept up the pace of the γ-ray observations. We have selected an unbiased sample of 42 nearby BL Lacs, located at z<0.2 and within the SDSS footprint, independent of flux density.
We have analysed data collected by the Fermi Large Area Telescope (LAT) during its first 8.5 years of operation in the energy range 0.1 – 300 GeV. We investigate the high-energy properties of the BL Lacs, and in particular the distribution of their γ-ray flux and photon index, and the connection between the γ rays and VLBI properties. The LAT-detected BL Lacs seem composed primarily of "classical" sources dominated by Doppler boosting and characterized by compact and bright radio emission as well as hard γ-ray spectra. However, three LAT-detected sources show non-classical properties for a γ-ray emitting BL Lac.

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