

Simultaneous spectra and radio properties of BL Lacs

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Abstract

© 2017 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim We present the results of 9 years of the blazar observing program at the RATAN-600 radio telescope (2005–2015). The data were obtained at six frequency bands (1.1, 2.3, 4.8, 7.7, 11.2, and 21.7 GHz) for 290 blazars, mostly BL Lacs. In addition, we used data at 37 GHz obtained quasi-simultaneously with the Metsahovi radio observatory for some sources. The sample includes blazars of three types: high-synchrotron peaked (HSP), low-synchrotron peaked (LSP), and intermediate-synchrotron peaked (ISP). We present several epochs of flux density measurements, simultaneous radio spectra, spectral indices, and properties of their variability. The analysis of the radio properties of different classes of blazars showed that LSP and HSP BL Lac blazars are quite different objects, on average. LSPs have higher flux densities and flatter spectra, and their variability increases as higher frequencies are considered. On the other hand, HSPs are very faint in the radio domain and tend to have steep low-frequency spectra, and they are less variable than LSPs at all frequencies. Another result is the spectral flattening above 7.7 GHz detected in HSPs, while an average LSP spectrum typically remains flat at both the low and high frequency ranges we considered.

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Keywords

galaxies: BL Lacertae objects: general – galaxies: active – radio continuum: galaxies

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