

MULTIFREQUENCY SPECTRA OF EXOSAT BLAZARS

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BL Lacs, Highly Polarized Quasars (HPQs) and Optically Violent Variables (OVVs) are classed as blazars. Based on the multifrequency spectral properties of these objects we have classified the blazars into two groups which are as follows:

– Group I - BL Lacs

BL Lac objects are soft X-ray sources (Hardness ratio is less than 5) with steep and flat spectral indices in the X-ray and ultraviolet bands, respectively. They are relatively less polarized (in the optical band) and low luminous objects ($M_{abs} < -23$). Radio to X-ray spectra of BL Lacs can be fitted with a single parabolic curve and these objects radiate most of their energies in the X-ray band (radio through X-ray frequencies).

– Group II - HPQs/OVVs

HPQs and OVVs are hard X-ray sources (Hardness ratio is greater than 5) with flat and steep spectral indices in the X-ray and ultraviolet bands, respectively. These are highly polarized and highly luminous ($M_{abs} > -23$) objects. Radio to X-ray continuum emission spectra of HPQs/OVVs can be fitted with two parabolic curves with the spectral break between UV and X-ray bands and these objects radiate most of their energies in the infrared band.

We have found a new bimodal nature of the distribution of blazars in the radio and the X-ray luminosity plane. Also the spectral indices between UV and X-ray bands and the UV spectral indices are correlated and anticorrelated for BL Lacs and HPQs/OVVs, respectively. The above results suggest that either BL Lacs and HPQs/OVVs are two different classes of objects, or they are same type of objects with different alignments of the jets to the line-of-sight. Inhomogeneous jet model of Ghisellini et al. (1985, *A&A*, 146, 204) can explain the steep and flat X-ray spectra of BL Lacs and HPQs/OVVs, respectively. However, the above model which suggests that the UV radiation is due to synchrotron mechanism from both the types of objects, can not explain the relatively flat and very steep UV spectral indices of BL Lacs and HPQs/OVVs, respectively. Also the model of Ghisellini et al. (1985) is unable to explain certain other detail results of blazars. There are other competitive models of blazars but, at present, any single model is unable to explain all the observed properties of blazars.