The Blazar Times

A Research Newsletter Dedicated to BL Lacs, Blazars and Other Nonsense

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Journal Abstracts

Observations of 1803+784 from the geodetic-VLBI archive of the Washington correlator

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We present 11 maps of 1803+784 derived from geodetic VLBI observations archived at the Washington correlator. The observations were obtained during the years of 1988-1999. In this period 3 superluminal components with an expansion rate of 0.084 mas yr^{-1} were identified. A remarkable feature of the VLBI images is that the superluminal components only become visible on the jet at a radius of 1 mas from the core which was interpreted as a result of a helically curved jet. This feature and further evidences of helical pattern found in published high dynamic range VLBI maps at parsec scale (Kellermann et al. 1998) and kiloparsec scale (Britzen et al. 1999) enabled us to obtain a well constrained helical jet. The overall radio morphology of 1803+784 could be described by two dominant components given by a narrow helical jet extending east-west about 6 kpc from the core (deprojected size of 30 kpc) and a much larger north-south component perpendicular to the helical jet (cone axis) with a linear size of about 270 kpc.

Accepted by ApJ

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SDSS J124602.54+011318.8: A Highly Variable AGN, Not an Orphan GRB Afterglow

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The optically variable source SDSS J124602.54+011318.8 first appears in Sloan Digital Sky Survey (SDSS) data as a bright point source with nonstellar colors. Subsequent SDSS imaging and spectroscopy showed that the point source declined or disappeared, revealing an underlying host galaxy at redshift 0.385. Based on these properties, the source was suggested to be a candidate "orphan afterglow": a moderately beamed optical transient, associated with a gamma-ray burst (GRB) whose highly beamed radiation cone does not include our line of sight. We present new imaging and spectroscopic observations of this source. When combined with a careful re-analysis of archival optical and radio data, the observations prove that SDSS J124602.54+011318.8 is in fact an unusual radio-loud AGN, probably in the BL Lac class. The object displays strong photometric variability on time scales of weeks to years, including several bright flares, similar to the one initially reported. The SDSS observations are therefore almost certainly not related to a GRB. The optical spectrum of this object dramatically changes in correlation with its optical brightness. At the bright phase, weak, narrow oxygen emission lines and probably a broader Hα line are superposed on a blue continuum. As the flux decreases, the spectrum becomes dominated by the host galaxy light, with emerging stellar absorption lines, while both the narrow and broad emission lines have larger equivalent widths. We briefly discuss the implications of this discovery on the study of AGNs and other optically variable or transient phenomena.

To appear in the June 2002 issue of PASP

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Evidence for the evolutionary sequence of blazars: different types of accretion flows in BL Lac objects

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The limits on the mass of the black hole in 23 BL Lac objects are obtained from their luminosities of the broad emission line Hβ on the assumption that broad emission lines are emitted from clouds ionized by the radiation of the accretion disk surrounding a black hole. The distribution of line luminosity $L_{\rm H\beta}$ of all these BL Lac objects suggests a bimodal nature, although this cannot be statistically proven on the basis of the present, rather small sample. We found that standard thin disks are probably in the sources with $L_{\rm H\beta} > 10^{41}$ erg s^{-1}. The central black holes in these sources have masses of $10^{8-10} M_{\odot}$, if the matter is accreting at the rate of $0.025 \dot{M}_{\rm Edd}$. For the sources with $L_{\rm H\beta} < 10^{41}$ erg s^{-1}, the accretion flows have transited from standard thin disk type to the ADAF type. The lower limits on the mass of the black hole in these sources are in the range of $1.66 - 24.5 \times 10^8$ $M_{\odot}$. The results support the evolutionary sequence of blazars: FSRQ→LBL→HBL.

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Abstract Guidelines

Abstracts for "The Blazar Times" are solicited for papers that have been recently accepted for publication by a refereed journal, and for recent Ph.D. theses. Please do not submit an abstract before it has been accepted, nor after it is published. Abstracts from papers which are not refereed (e.g., conference proceedings) are not accepted.

The subject matter should pertain directly to the BL Lac and/or blazar phenomenon in general. Both observational and theoretical abstracts are appropriate. Abstracts from papers dealing with other classes of AGN will generally not be included unless they explicitly discuss their relevance to the blazar phenomenon; however exceptions to this rule will be considered.

A monthly call for abstracts will be issued and abstracts received by the last day of the month will usually appear in the following month's newsletter. Announcements of general interest to the BL Lac and blazar communities may also be submitted for posting in the newsletter. These might include (but are not restricted to) the following: (i) *Job Openings* directed toward blazar researchers, (ii) announcements of *Upcoming Meetings*, (iii) announcements of *Upcoming Observing Campaigns* for which participation is solicited from the community at large, (iv) reviews of *New Books*, and (v) *General Announcements* that provide or request research-related information.

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