

The Blazar Times

A Research Newsletter Dedicated to the BL Lac and Blazar Phenomena

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Employment Opportunities

Three Postdoctoral Vacancies

ENIGMA Network¹, LSW Heidelberg², Osservatorio Astronomico di Torino³, and Osservatorio Astronomico di Brera⁴

¹ ENIGMA Network: Structure and Radiation Processes of AGN through multi-frequency analysis

² Landessternwarte Heidelberg, Königstuhl, 69117 Heidelberg, Germany

³ Osservatorio Astronomico di Torino, Via Osservatorio, Torino, Italy

⁴ Osservatorio Astronomico di Brera, 20121 Milano and 23807 Merate, Italy

Within the newly established European Research Training Network ENIGMA on "Structure and Radiation Processes of AGN through multi-frequency analysis" we seek to fill three postdoctoral positions. They will be hosted by three of the eight European research institutions working within this project.

The network has been established to carry out research on Blazars in the following areas:

- Numerical simulations and analytical modeling of Blazar jets to study:
 - particle acceleration and radiation mechanisms,
 - magneto-hydrodynamic flows,
 - jet physics in Blazars.
- Multi-frequency observations of radio-loud AGN to study:
 - radio/optical Intra-Day variability,
 - relationships between structural and flux density variability,
 - relations in different high-energy bands (X-ray, γ -rays, and VHE radiation with Cerenkov telescopes).
- Advanced statistical methods for time-series and applications to astrophysical models.
- Developing high-precision photometric routines in different waveband regimes.
- Developing reliable robotic systems for automated ground-based monitoring of AGN.

Postdocs will work in their host team and within this active and interacting network of empirical and theoretical research. They are encouraged to spend part of their time at other institutes during their appointment. They will have access to unique observational facilities and will profit from a strong training program involving hardware-related aspects, observational strategies in all waveband regimes, and theoretical research.

Questions regarding the research program can be directed to the network coordinator, S. Wagner.

The three positions will become available between June 2003 and September 2003. The positions are available for up to three years. Competitive salaries will be paid, differing according to local regulations. Additional support will be

available for extended visits to other partner institutions within the network, network meetings and conferences. More detailed information is available at <http://www.lsw.uni-heidelberg.de/~swagner/enigmavac1.html>

According to the rules of the EC, the positions are open to young researchers, holding a passport of a member or associate state of the European Union. Further details are given by the regulations of the EC programme (<http://www.cordis.lu/improving/networks/faq.htm#q5>).

Applications should include a curriculum vitae, a publication list, a summary of current research interests as well as a list of topics of interest or institutes which they would prefer to join. Two letters of reference should also be arranged for. The review of applications will start in the end of May 2003, and will continue until all positions are filled. Material should be sent to Landessternwarte Heidelberg, S. Wagner, Königstuhl 12, 69117 Heidelberg, Germany, swagner@lsw.uni-heidelberg.de.

Further positions will become available during the next months.

For further information contact: swagner@lsw.uni-heidelberg.de

For further information on WWW: <http://www.lsw.uni-heidelberg.de/~swagner/enigma.html>

Journal Abstracts

Black hole mass and binary model for BL Lac object OJ 287

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Recent intensive observations of the BL Lac object OJ 287 raise a lot of questions on the models of binary black holes, processing jets, rotating helical jets and thermal instability of slim accretion disks. After carefully analyzing their radio flux and polarization data, Valtaoja et al. propose a new binary model. Based on the black hole mass of 4×10^8 Msun estimated with the tight correlations of the black hole masses and the bulge luminosity or central velocity dispersion of host galaxies, we computed the physical parameters of the new binary scenario. The impact of the secondary on the accretion disk around the primary black hole causes strong shocks propagating inwards and outwards, whose arrival at the jet roots is identified with the rapid increase of optical polarization and the large change of polarization angle at about 0.30 yr after the first main optical flare. An increase of optical polarization, a large rotation of positional angle and a small synchrotron flare at 2007.05 between the optical outbursts at 2006.75 and 2007.89 are expected by the model. With the estimated parameters, we predicated an increase of gamma -ray flux appearing about 5 days after the first optical/IR peak, which is consistent with the EGRET observations.

Appeared at 2002, A&A, 388, L48

For preprints contact: fkliu@bac.pku.edu.cn

The Optical Emission from Gamma-ray Quasars.

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We present photometric observations of six radio-loud quasars that were detected by the COMPTEL gamma-ray telescope. The data encompasses seven wavebands in the optical and near-infrared. After correction for Galactic extinction, we find a wide range in optical slopes. Two sources are as blue as optically-selected quasars, and are likely to be dominated by the accretion disc emission, while three others show colours consistent with a red synchrotron component. We discuss the properties of the COMPTEL sample of quasars, as well as the implications our observations have for multi-wavelength modelling of gamma-ray quasars.

Accepted by P.A.S.A.

For preprints contact: m.whiting@unsw.edu.au

For preprints via ftp or WWW: <http://arXiv.org/abs/astro-ph/0304405>

Jet Collimation in Action: Re-alignment on Kiloparsec Scales in 3C 279

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We report a change in the trajectory of a well studied jet component of the quasar 3C 279. The component changes in apparent projected speed and direction, and we find it to be moving with a Lorentz factor $\gamma \geq 15$ at an initial angle of $\leq 1^\circ$ to the line of sight. The new trajectory of the component has approximately the same speed and direction as an earlier superluminal feature, originally seen in the early 1970s. The new direction for the component is also much better aligned with larger scale VLBA and VLA structure out to $0.1''$. We suggest that the trajectory change is a collimation event occurring at ≥ 1 kiloparsec (deprojected) along the jet. While the change in trajectory on the sky appears to be 26° the intrinsic change is $\leq 1^\circ$. We estimate the Doppler factor prior to the change in direction to be $\delta \geq 28$ and after the change to be $\delta \geq 23$. Comparison to independent constraints on the Doppler factor suggest that the energy in the radiating particles cannot greatly exceed the energy in the magnetic field unless the volume filling factor is very much less than one.

Accepted by ApJ Letters

For preprints contact: dhoman@nrao.edu

For preprints via ftp or WWW <http://www.journals.uchicago.edu/ApJ/rapid.html>

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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`blazar@nrao.edu`

Contributions and all other correspondence relevant to the newsletter should also be sent to the above address. Please note that I respect the privacy of subscribers; therefore I will not distribute *under any circumstance* the subscriber email list.

To contribute, please use the appropriate LaTeX abstract and thesis templates, which can be obtained from “The Blazar Times” web page at:

`http://www.aoc.nrao.edu/~trector/blazar/`

Abstracts which are not in this template format cannot be accepted. Both templates are stand-alone LaTeX documents; and I ask that you compile them with LaTeX to check for any errors before submitting. This will save me tremendous efforts in solving any problems; and will assure that your abstract will appear in the newsletter as you had intended. Important: If you use any specially defined characters be sure to include their definitions as well.