Gamma-Ray and Parsec-Scale Jet Properties of a Complete Sample of Blazars From the MOJAVE Program

M. L. Lister, M. Aller, H. Aller, T. Hovatta, K. I. Kellermann, Y. Y. Kovalev, E. T. Meyer, A. B. Pushkarev, E. Ros, for the MOJAVE collaboration, M. Ackermann, E. Antolini, L. Baldini, J. Ballet, G. Barbiellini, D. Bastieri, K. Bechtol, R. Bellazzini, B. Berenji, R. D. Blandford, E. D. Bloom, M. Boeck, E. Bonamente, A. W. Borgland, J. Bregeon, M. Brigida, P. Bruel, R. Buehler, S. Buson, G. A. Caliandro, R. A. Cameron, P. A. Caraveo, J. M. Casandjian, E. Cavazzuti, C. Cecchi, C. S. Chang, E. Charles, A. Chekhtman, C. C. Cheung, J. Chiang, S. Ciprini, R. Claus, J. Cohen-Tanugi, J. Conrad, S. Cutini, F. de Palma, C. D. Dermer, E. do Couto e Silva, P. S. Drell, A. Drlica-Wagner, C. Favuzzi, S. J. Fegan, E. C. Ferrara, J. Finke, W. B. Focke, P. Fortin, Y. Fukazawa, P. Fusco, F. Gargano, D. Gasparrini, et al. (87 additional authors not shown) You must enabled JavaScript to view entire author list.

(Submitted on 25 Jul 2011 (v1), last revised 31 Aug 2011 (this version, v2))

We investigate the Fermi LAT gamma-ray and 15 GHz VLBA radio properties of a joint gamma-ray- and radio-selected sample of AGNs obtained during the first 11 months of the Fermi mission (2008 Aug 4 - 2009 Jul 5). Our sample contains the brightest 173 AGNs in these bands above declination -30 deg. during this period, and thus probes the full range of gamma-ray loudness (gamma-ray to radio band luminosity ratio) in the bright blazar population. The latter quantity spans at least four orders of magnitude, reflecting a wide range of spectral energy distribution (SED) parameters in the bright blazar population. The BL Lac objects, however, display a linear correlation of increasing gamma-ray loudness with synchrotron SED peak frequency, suggesting a universal SED shape for objects of this class. The synchrotron self-Compton model is favored for the gamma-ray emission in these BL Lacs over external seed photon models, since the latter predict a dependence of Compton dominance on Doppler factor that would destroy any observed

synchrotron SED peak - gamma-ray loudness correlation. The high-synchrotron peaked (HSP) BL Lac objects are distinguished by lower than average radio core brightness temperatures, and none display large radio modulation indices or high linear core polarization levels. No equivalent trends are seen for the flat-spectrum radio quasars (FSRQ) in our sample. Given the association of such properties with relativistic beaming, we suggest that the HSP BL Lacs have generally lower Doppler factors than the lower-synchrotron peaked BL Lacs or FSRQs in our sample.

Comments:	22 pages, 11 figures, 4 tables; accepted for publication in the Astrophysical Journal
Subjects:	**Cosmology and Extragalactic Astrophysics (astro-ph.CO)**; High Energy Astrophysical Phenomena (astro-ph.HE)
Journal reference:	Astrophysical Journal 742 (2011) id. 27
DOI:	10.1088/0004-637X/742/1/27
Cite as:	**arXiv:1107.4977 [astro-ph.CO]**
	(or **arXiv:1107.4977v2 [astro-ph.CO]** for this version)

Submission history

From: Yuri Kovalev Jr. [view email]
[v1] Mon, 25 Jul 2011 15:22:50 GMT (88kb)
[v2] Wed, 31 Aug 2011 16:05:31 GMT (108kb)

Which authors of this paper are endorsers?