F-GAMMA: On the phenomenological classification of continuum radio spectra variability patterns of Fermi blazars

E. Angelakis, L. Fuhrmann, I. Nestoras, C. M. Fromm, M. Perucho, R. Schmidt, J. A. Zensus, N. Marchili, T. P. Krichbaum, H. Ungerechts, A. Sievers, D. Riquelme, V. Pavlidou

(Submitted on 20 Feb 2012)

The F-GAMMA program is a coordinated effort to investigate the physics of Active Galactic Nuclei (AGNs) via multi-frequency monitoring of Fermi blazars. In the current study we show and discuss the evolution of broad-band radio spectra, which are measured at ten frequencies between 2.64 and 142 GHz using the Effelsberg 100-m and the IRAM 30-m telescopes. It is shown that any of the 78 sources studied can be classified in terms of their variability characteristics in merely 5 types of variability. It is argued that these can be attributed to only two classes of variability mechanisms. The first four types are dominated by spectral evolution and can be described by a simple two-component system composed of: (a) a steep quiescent spectral component from a large scale jet and (b) a time evolving flare component following the "Shock-in-Jet" evolutionary path. The fifth type is characterised by an achromatic change of the broad band spectrum, which could be attributed to a different mechanism, likely involving differential Doppler boosting caused by geometrical effects. Here we present the classification, the assumed physical scenario and the results of calculations that have been performed for the spectral evolution of flares.

Comments: Proceedings of the conference: "The Central Kiloparsec in Galactic Nucleic: Astronomy at High Angular Resolution 2011", August 29 - September 2, 2011, Bad Honnef, Germany

Subjects: **High Energy Astrophysical Phenomena (astro-ph.HE)**; Cosmology and Extragalactic Astrophysics (astro-ph.CO)

Cite as: **arXiv:1202.4242 [astro-ph.HE]**

(or **arXiv:1202.4242v1 [astro-ph.HE]** for this version)

Submission history

From: Emmanouil Angelakis [view email]

[v1] Mon, 20 Feb 2012 07:57:04 GMT (372kb)

Which authors of this paper are endorsers?