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F-GAMMA program: multi-frequency radio monitoring of Fermi blazars

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Motivated by the advent of Fermi gamma-ray space telescope and the potential of multi-energy studies of AGN, we initiated in January 2007 a monthly multi-frequency radio monitoring of almost 100 gamma-ray blazars. The observations were being conducted primarily with the Effelsberg 100-m, the IRAM Pico Veleta 30-m and less regularly the APEX 12-m telescopes in the frequency range from 2.6 to 345 GHz. The resulting dataset is characterized by an effective cadence of a measurement every 1.3 months with a coherence of the resulting radio SEDs of better than 10 days. The monitoring has been conducted in linear and circular polarization mode.

This effort which culminated in January 2015 with the completion of the nominal operation of the program resulted a vast dataset that is being explored. In this talk I aim at reviewing the program and discuss some of the most noteworthy findings, such as:

- the detection of a statistically rigorous correlation between gamma-rays and radio flux densities
- the detection of a correlation of radio and gamma-ray light curves which allowed us to constrain the location of the gamma-ray production site
- the unification of the spectral variability patterns to small number of classes all of which are explainable with the operation of shocks in the jet
- the modeling of the multi-frequency circular and linear polarization light curves with full-Stokes radiative transfer
- the detection of blazar-like jets from Narrow Line Seyfert galaxies

Author: Dr ANGELAKIS, Emmanouil (Max-Planck-Institut für Radioastronomie)

Co-authors: Prof. ZENSUS, J. Anton (Max-Planck-Institut für Radioastronomie); Dr FUHRMANN, Lars (Max-Planck-Institut für Radioastronomie)

Presenters: Dr ANGELAKIS, Emmanouil (Max-Planck-Institut für Radioastronomie); Dr MYSERLIS, Ioannis (Max Planck Institut für Radioastronomie)

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