

Relentless multi-wavelength variability of Mrk 421 and Mrk 501

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- What is this contribution about?

This contribution is about a long-term multi-wavelength campaign on Mrk 421 and Mrk 501. The blazars were observed from radio to TeVs from December 2012 to April 2018.

- Why is it relevant/interesting?

The TeV light curve, obtained with the FACT telescope, is the longest densest light curve for these two blazars published to date.

- What have we done?

We performed a variability analysis, identified individual flares, calculated the cross-correlations for the light curves. Compared the obtained variability time scales with expectation of the leptonic one-zone SSC scenario.

- What is the result?

Highest variability was found in TeV and X-ray, lowest in GeV and radio. A zero-compatible lag derived from correlations between the TeV and X-ray light curves of Mrk 421 and Mrk 501 indicates that emissions in these two bands are driven by the same physical parameter and are consistent with the leptonic emission scenario. The observed periods between the TeV flares, 7.5-30 days in Mrk 421, and 5-40 days in Mrk 501, are compatible with predictions of the Lense-Thirring precession for an inclined accretion disk.

*https://fact-project.org/collaboration/icrc2021_authorlist.html