

## Unbiased Long-Term Study - Revealing FACTs about the Harder-when-Brighter Behaviour of Mrk 421

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Featuring two peaks in the spectral energy distribution, blazars show a high variability in X-rays and very-high-energy gamma rays. A harder-when-brighter behaviour is found in many studies of the spectral index in correlation with the flux.

Within the FACT monitoring program, more than 3200 hours of physics data have been taken on the blazar Mrk 421 at TeV energies. Thanks to an unbiased observation strategy, this data sample is ideally suited for systematic long-term studies. Owing to the stable photosensors that allow for observation during bright moon and the automatic and remote operation, the data sample spreads over 10 years and covers more than 1100 nights in total.

The presentation summarizes an unprecedented study of Mrk 421 with the focus on the correlation of the spectral index with the flux at very high energies, probing the often observed hard-when-brighter behaviour.

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