

Unravelling the complex behaviour of our closest very-high-energy gamma-ray blazars, Mrk421 and Mrk501

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Because of their brightness and proximity ($z=0.03$), Mrk421 and Mrk501 are among the very-high-energy gamma-ray objects that can be studied with the greatest level of detail. This makes them excellent astrophysical high-energy physics laboratories to study the nature of blazars. Since 2009, there has been an unprecedentedly long and dense monitoring of the radio to very-high-energy gamma-ray emission from these two archetypical TeV blazars. In the conference I will report recent highlight results obtained from these multi-wavelength campaigns. Despite some differences in the variability patterns of these two sources, there are also a number of similarities that support a broadband emission dominated by leptonic scenarios, as well as indications for in situ electron acceleration in multiple compact regions. I will discuss the complexity in the temporal evolution of their broadband emission and the presence of different flavors of flaring activity. I will also show detailed observational and theoretical results related to the 2-week long highest X-ray activity observed with Swift-XRT since its launch almost 14 years ago. These multi-instrument observations have yielded thought-provoking results, and demonstrate the importance of performing a continuous monitoring over multi-year timescales to fully characterise the dynamics of blazars.

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