

A Precise and Long-term Correlation Study of X-ray and TeV Emission from Mrk 421

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Markarian 421 is the closest and most luminous BL Lac object known, which has motivated many multiwavelength observational campaigns from radio to the highest energy gamma rays. Prior studies have determined that X-ray and TeV emission are the most variable and the most closely correlated; however, the exact properties of the correlation over a long period of time are not clear. Furthermore, the flux in these energy bands is known to vary on timescales as short as minutes, which requires the X-ray and TeV observations used for these studies to be precisely matched in time. Over the past fifteen years, Swift-XRT (0.2-10 keV) and VERITAS (>100 GeV) have coordinated observations and have built up a large, strictly contemporaneous dataset between them. Using these data allows us to consider the correlations between observations that overlap exactly in time, over a wide range of timescales and source flux states. We present here the results of a precise and long-term correlation study, from 2007 to the present.

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