Multi-messenger characterization of Mrk501 during historically low X-ray and gamma-ray activity

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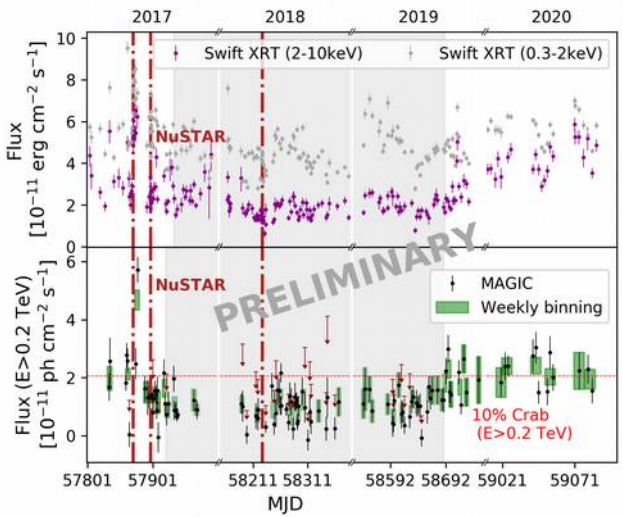
What is this contribution about?

During the period from mid-2017 to mid-2019, Mrk501 showed historically low activity in X-rays and very high energy gamma-rays. Extensive multi-wavelengths campaigns together with three additional long *NuSTAR* observations enable us to characterize this low-state.

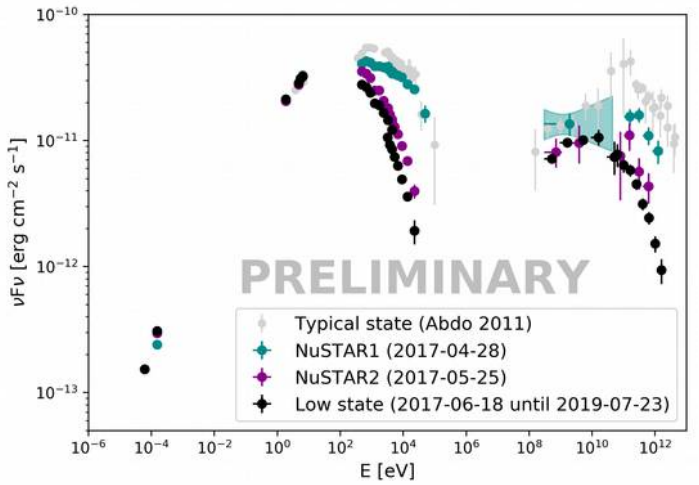


Why is it relevant/ interesting?

This extensive data set is very well suited to investigate the nature of the low-state and evaluate the potential existence of a steady baseline component in the blazar emission, which is often outshone by the emission of more variable and active regions.

What have we done?

We used both leptonic and hadronic scenarios to describe the low-state spectral energy distribution (SED) and to investigate the underlying mechanisms. Additionally, we evaluated the evolution of the SED using the *NuSTAR* observations before the low-state and assuming a two-zone scenario including our stable baseline emission together with a variable component.



What is the result?

Both leptonic and hadronic models can reproduce the low-state emission in agreement with the available multi-messenger data. Furthermore, the hypothesis of this baseline emission being a constant component of the blazar emission holds under the first tests using the SEDs prior to the low-state period.