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## Broadband characterisation and physical implications from the most extreme X-ray flaring activity of the high-peaked BL Lac Mrk 501

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The high-frequency-peaked BL Lac object Markarian 501 is a very high energy (VHE,  $E > 100$  GeV) emitter located in our extragalactic neighborhood ( $z=0.034$ ). The source can be detected in the VHE band during low state, what makes this target an ideal source for long-term multi-wavelength studies covering the entire electromagnetic spectrum. During a multi-wavelength campaign in 2014, the source showed the highest X-ray activity observed by Swift-XRT during the last decade. The source displayed very hard spectra at X-rays and gamma-ray energies with variability on day timescales. The distortion of the broadband SED strongly suggests the existence of, at the very least, an extra component with ultra-energetic and relatively narrow electron energy distribution, which had never been seen before for Mrk501. In the conference I will report about this unprecedented flaring event and its physical implications.

### Collaboration

on behalf of the MAGIC and Fermi-LAT collaboration

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