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Spectral characteristics of Mrk 501 during the 2012 and 2014 flaring states

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The BL Lac object Mrk 501 was observed at Very High Energies (E > 100 GeV) with H.E.S.S. (High Energy Stereoscopic System) between 2004 and 2014. The source is detected with high significance above ∼2 TeV in ∼13.6 h livetime. The observations include periods of low flux and active phases. This led to the detection of strong flaring events, which in 2014 showed a flux level comparable to the 1997 historical maximum. Such high flux states enabled spectral variability and flux variability studies down to a timescale of a few minutes in the 2-20 TeV energy range. During the 2014 flare, the source is clearly detected in each time bin. The spectrum does not show intrinsic curvature in this energy range. Flux dependent spectral analyses are also carried out. The peculiarity of this study resides in the unprecedented combination of short timescales and an energy coverage that extends significantly above 10 TeV. The high energies allow us to probe the effect of EBL absorption at low redshifts, jet physics and LIV. The multiwavelength context of these VHE observations will be presented as well.

Collaboration

H.E.S.S.

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