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A curved jet model for the synchrotron emission of the BL Lac object PG 1553+113.

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We report on the results of a multifrequency campaign on the BL Lac object PG 1553+113 that was organized by the Whole Earth Blazar Telescope (WEBT) Collaboration in 2013 April-August. Nineteen optical, two near-IR, and three radio telescopes monitored the source to follow its behaviour at low energies during and around the high-energy observations by the MAGIC telescopes in April-July. A general bluer-when-brighter trend characterizes the optical emission.
We also analyse the UV and X-ray data acquired by the Swift and XMM-Newton satellites in the same period and compare them with previous observations.
The long XMM-Newton exposure reveals a curved X-ray spectrum, which shows a harder-when-brighter behaviour on long time scales.
In the spectral energy distribution (SED), the XMM-Newton near-UV spectrum is hard, while Swift data display a softer shape that is confirmed by previous HST-COS and IUE observations.
An estimate of the synchrotron peak through polynomial fits to the optical-X-ray SED suggests that it lies in the 4-30 eV energy range, with a general increase with X-ray brightness.
However, the UV and X-ray spectra do not connect smoothly. We propose an interpretation of the SED shape and variability in terms of orientation changes of the helical structure of an inhomogeneous jet.

Collaboration

The Whole Earth Blazar Telescope (WEBT) Collaboration

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