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Twelve years of PG 1553+113

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PG 1553+113 is a BL Lac object located at redshift z=0.433. It is one of the brightest and most observed extragalactic sources in the very-high-energy (VHE, E>100 GeV) gamma-ray band. One of its characteristics is the evidence of quasi-periodic modulation in high-energy (HE, >100 MeV) gamma-rays detected by Fermi-LAT, with a period of about 2.2 years.

In this contribution, we present the MAGIC and multiwavelength data collected in more than a decade of observations. Intra-band correlation analysis, as well as search for periodic emission, suggest that the emission mechanisms may be described by a two-zone synchrotron-self compton (SSC) model with two distinct electron populations. While the low-energy population is responsible for the optical, UV and HE gamma-ray photons, the X-ray and VHE bands are explained by an additional high-energy population.

Very remarkably, in April 2019, PG 1553+113 reached the brightest emission ever observed at VHE. To model this emission, we tested a two-zone SSC model for this source for the first time. This model properly reproduced the data and additionally is in line with the observed correlation among bands.

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