

Extreme blazars under the eyes of MAGIC

Executive summary

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We present results of observations of Extreme high-frequency-peaked BL Lac objects (EHBLs) by the MAGIC telescopes. EHBLs are characterized by a spectral energy distribution (SED) featuring a synchrotron peak energy above 1 keV. Several EHBLs display a hard spectral index at very high energies (VHE; $E > 100$ GeV), suggesting a gamma-ray SED component peaking significantly above 1 TeV. EHBLs are the most energetic persistent sources in the universe and such extreme properties are challenging current standard emission and acceleration mechanisms. This contribution reports on long-term observing campaigns of tens of EHBLs that have been organized by the MAGIC collaboration to enlarge their population at VHE in order to understand the origin of their extreme properties. We show results of the first hard-TeV EHBL catalog by the MAGIC Collaboration. The MAGIC observations are accompanied by an extensive multi-wavelength coverage to interpret the emission within leptonic and hadronic models. We also present the recent detection of the EHBL 1RXS0812.0+0237 in the VHE band. Finally, we discuss a broad multi-wavelength campaign on the BL Lac type object 1ES2344+514, which showed intermittent EHBL characteristics in August 2016.