

Q16a Observations of the unidentified source HESS J1809-193 at TeV energies with the MAGIC telescopes using the Very Large Zenith Angle technique

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The origin of Galactic Cosmic rays up to PeV energies is one of the longest-standing problems in astroparticle physics. One of the main sources are regarded to be Supernova remnants (SNRs). While SNRs are known to accelerate protons, so far there is no evidence that SNRs can accelerate CRs to PeV energies. A gamma-ray spectrum extending up to ~ 100 TeV would be a signature of a so-called Galactic PeVatron, an object accelerating protons up to the knee of the Cosmic ray spectrum. The current multi-wavelength data indicate that HESS J1809-193 is one of the most promising Galactic PeVatron candidates. So far, no firm identification on the source nature has been established as there are several possible counterparts at lower energies; one of them being SNR G11.0-0.0. We report on an observational campaign with the MAGIC telescopes on HESS J1809-193 since 2019 in the very-high-energy gamma-ray domain. The data were obtained with the Very Large Zenith Angle technique, which increased the collection area significantly to $\sim 1\text{km}^2$. We used ~ 60 hours of data to explore the spectrum and the morphology of the source at energies above several TeV.