

Observation of Galactic gamma-ray sources above 100 TeV with the HAWC Observatory

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Abstract content

Since Galactic cosmic rays are observed in the PeV range, at least a few sources that accelerate particles to this energy (“PeVatrons”) should exist. A PeVatron is expected to have a hard, hadronic gamma-ray spectrum that extends to at least tens of TeV without any apparent spectral break or cutoff. High energy (> 100 TeV) gamma ray observations are therefore essential to the study of these cosmic accelerators. Additionally, any leptonic component of the gamma-ray emission is suppressed at these energies. The High Altitude Water Cherenkov Observatory (HAWC) has sensitivity to gamma rays in this largely unexplored energy range and is well poised to perform all-sky surveys due to its high duty cycle and large field-of-view. I will discuss sources seen above 100 TeV in the first 1000 days of HAWC data and discuss whether any of them can be identified as PeVatron candidates. As PeVatrons are also expected to emit neutrinos, I will also briefly discuss connections to the IceCube astrophysical neutrinos.

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