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Observation of the Cygnus Region using HAWC data

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The Cygnus region consists of multiple gamma-ray source types such as pulsar wind nebulae (PWN), supernova remnants, binary systems, and star clusters. Several gamma-ray instruments have observed gamma-ray sources in this region. For instance, Fermi-LAT found gamma-ray emission at GeV energies due to a Cocoon of freshly accelerated cosmic rays, which is co-located with a known PWN seen by several TeV gamma-ray observatories. TeV J2032+4130 is likely powered by the pulsar PSR J2032+4127 based on the multi-wavelength observation and asymmetric morphology reported by VERITAS. The High Altitude Water Cherenkov (HAWC) observatory has reported five sources within the Cygnus region, three of which lie in the vicinity of the cocoon region reported by Fermi-LAT. This presentation will discuss the analysis of data collected with the HAWC instrument to provide a deeper understanding of the Cygnus cocoon. The study of HAWC data will provide more information regarding the morphology, emission origin, and the correlation with the GeV emission.

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