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Observation of Galactic Cosmic Rays and Gamma Rays with the High Altitude Water Cherenkov Observatory (15' + 5')

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The High-Altitude Water Cherenkov Observatory, or HAWC, is carrying out an unbiased survey of cosmic rays and gamma rays from the Northern Hemisphere between 100 GeV and 100 TeV. HAWC is currently the only high-uptime wide-field TeV observatory in operation, and has a robust program to search for flares and other transient sources of gamma rays. The detector is also well suited to observe spatially extended regions of gamma-ray emission and cosmic-ray anisotropy. HAWC recently concluded its first year of data taking with the complete detector. The results include not only observations of many known TeV point sources, but also extended emission from Galactic objects like the Geminga supernova remnant. These results have implications for the origins of several astrophysical anomalies observed in the cosmic-ray data, such as the excess of Galactic positrons at Earth. We will describe results from HAWC with a focus on the observation of cosmic rays and Galactic sources of gamma rays.

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