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STATUS AND RESULTS OF THE HIGH ALTITUDE WATER CHERENKOV (HAWC) OBSERVATORY

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The High Altitude Water Cherenkov (HAWC) Observatory, located in Mexico at 4100 m altitude and 19 degrees N latitude, is designed to observe astrophysical sources of cosmic and gamma rays with energies from several hundred GeV up to several hundred TeV. HAWC comprises a central array of 300 closely spaced water Cherenkov detector (WCD) tanks surrounded by a sparse array of 345 small WCD tanks. The central array covers approximately 22,000 m^2 with a high fill factor, providing excellent sampling of extensive air showers (EAS). The outer array extends the total coverage area by a factor of four, improving the measurement of extensive air showers by better constraining their core location. HAWC has extensively studied galactic sources of gamma rays, measuring their energy spectra and morphology. HAWC's wide field of view and continuous operation allow for observing and measuring variable and transient sources and serves as a survey instrument to map a significant fraction of the gamma-ray sky. HAWC has participated in several multi-messenger studies with other observatories, including the Ice Cube neutrino and LIGO/Virgo gravitational wave observatories. HAWC has performed many cosmic ray studies, such as measuring their energy spectrum and anisotropy of arrival directions. HAWC has also performed indirect dark matter searches and studies of beyond-standard model particle physics measurements. This talk will provide an overview of the status and highlight some results from HAWC's observation of the TeV sky.

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