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The HAWC Gamma Ray Observatory

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The High Altitude Water Cherenkov (HAWC) Gamma-Ray Observatory was completed this year at a 4100-meter site on the flank of the Sierra Negra volcano in Mexico. HAWC is a water Cherenkov ground array with the capability to distinguish 100 GeV - 100 TeV gamma rays from the hadronic cosmic-ray background. HAWC is uniquely suited to study extremely high energy cosmic-ray sources, search for regions of extended gamma-ray emission, and to identify transient phenomena. HAWC will play a key role in triggering multi-wavelength and multi-messenger studies of active galaxies, gamma-ray bursts, supernova remnants and pulsar wind nebulae. Observation of TeV photons also provide unique tests for a number of fundamental physics phenomena including dark matter annihilation and primordial black hole evaporation. Operation began mid-2013 with the partially-completed detector. Multi-TeV emission from the Galactic Plane is clearly seen in the first year of operation, confirming a number of known TeV sources, and a number of AGN have been observed. This talk will discuss the science of HAWC, summarize the status of the experiment, and highlight first results from analysis of the data.

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