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TeV Particle Astrophysics with the High Altitude Water Cherenkov (HAWC) Detector

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The High Altitude Water Cherenkov (HAWC) Gamma-ray Observatory was completed in March 2015 and is now giving us a new view of the sky. HAWC is a continuously operating, wide field-of-view observatory situated near Puebla, Mexico that observes 0.5–100 TeV gamma rays. It is 15 times more sensitive than previous generation Extensive Air Shower gamma-ray instruments and is able to detect the Crab nebula at $>5\sigma$ a day. HAWC operates 24 hrs/day with $>95\%$ on-time and observes the entire overhead sky (~ 2 sr) serving as a TeV “finder” telescope for Imaging Atmospheric Cherenkov Telescopes (IACTs). It monitors the same sky as gamma-ray satellites (Fermi), gravity-wave (LIGO) detectors and neutrino observatories (IceCube) allowing for multi-wavelength and multi-messenger observations. I will present highlights from HAWC’s first year and half of operations.

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