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TeV Astrophysics with the HAWC Observatory

Friday, August 7, 2015 2:00 PM (18 minutes)

The High-Altitude Water Cherenkov (HAWC) Observatory was completed and began full operation at the end of March 2015. Located at an elevation of 4100 meters above sea level and declination of 19 degrees north near the Sierra Negra volcano in central Mexico, HAWC is sensitive to 100 GeV - 100 TeV gamma-rays and cosmic-rays with a sensitivity to TeV-scale gamma-ray sources that is an order of magnitude better than previous air shower arrays. HAWC's wide field-of-view (˜2 sr), and continuous up-time (24 hours/day) make it an ideal survey instrument. 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, primordial black hole evaporation and Lorentz invariance violation. This talk will discuss the science of HAWC, summarize the status of the experiment, and highlight first results from analyses of the data.

Oral or Poster Presentation

Oral

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