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## HAWC: Design, Operation, Reconstruction and Analysis

*Thursday 30 July 2015 15:30 (1 hour)*

The High-Altitude Water Cherenkov (HAWC) Observatory was completed and began full operation in early 2015. The detector consists of an array of 300 water tanks, each containing ~200 tons of purified water and instrumented with 4 PMTs. Located at an elevation of 4100m a.s.l. near the Sierra Negra volcano in central Mexico, HAWC has a threshold for gamma-ray detection well below 1 TeV and a sensitivity to TeV-scale gamma-ray sources an order of magnitude better than previous air-shower arrays. The detector operates 24 hours/day and observes the overhead sky (~2 sr), making it an ideal survey instrument. We describe the configuration of HAWC with an emphasis on how the design was optimized, including the size depth and spacing of the water tanks, the positioning of the PMTs and the requirements of the readout system. We also describe how the data are acquired, reconstructed, and analyzed. Finally, we will demonstrate the sensitivity of the detector using the observation of the Crab plerion. This paper serves as a detailed technical description of the foundations of the numerous analyses presented at this meeting by members of the HAWC collaboration.

### Collaboration

HAWC

### Registration number following "ICRC2015-I"

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