

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Expanding the HAWC Observatory JOHANNA MORI, College of Idaho, HAWC COLLABORATION, HAWC Collaboration — To increase the effective area and sensitivity of the High Altitude Water Cherenkov Observatory to gamma-ray photons with energies higher than 10 TeV, we are building 350 smaller outrigger tanks around the main array of 300 existing tanks. HAWC detects cascades of charged particles (extensive air showers) created by TeV gamma rays hitting the atmosphere. Increasing the size of the array will improve the sensitivity of the array by a factor of 2 to 4 above 10 TeV, allowing for more accurate gamma-ray origin reconstruction and energy estimation. Building the outrigger array requires carefully calibrated equipment, including PMTs and high voltage signal cables of the correct length. Origin reconstruction relies on precise signal timing, so the signal cables lengths were standardized so that the signal transit time varied by less than 5 ns. Energy estimation depends on accurate photon counts from each tank, so the PMTs were calibrated with a laser and filter wheels to give the PMTs a known amount of light.

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Date submitted: 30 Sep 2016

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