

# Vulcano Workshop 2018 - Frontier Objects in Astrophysics and Particle Physics



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## Recent Results from the High Altitude Water Cherenkov (HAWC) Observatory

“The HAWC Observatory: Detecting the Highest Energy Gamma-Rays”

The High Altitude Water Cherenkov (HAWC) is a continuously operating (>95% on-time), wide field-of-view (~2 sr) observatory located at 14000' above sea level near Puebla, Mexico. HAWC observes ~2/3 of the sky each day and had detected nearly 50 sources of which about one quarter were previously unknown. Several of these sources have emission > 50 TeV. Most of the sources are within the Galactic plane. Of particular interest are the nearby pulsar wind nebulae Geminga and PSR B0656+14 which are postulated to produce high energy positrons at Earth. HAWC's wide field of view allows measurement of the angular extent out to several degrees thereby constraining the diffusion of positrons away from their sources. The resulting diffusion is much slower than previously assumed and thus the contribution to the local positrons is reduced. Also, within the region surveyed by HAWC are many dark matter rich objects, such as dwarf spheroidal galaxies, and these HAWC data place some of the strongest constraints to date on annihilating or decaying dark matter with masses >10 TeV.

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