

Abstract Submitted
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The HAWC Sensitivity to Dark Matter Annihilation and Decay

TOLGA YAPICI, Michigan State Univ, HAWC COLLABORATION — The High Altitude Water Cherenkov (HAWC) Observatory is an extensive air shower array in the state of Puebla, Mexico at an altitude of 4100m. The HAWC observatory will perform an indirect search for dark matter via GeV-TeV photons resulting from dark matter annihilation and decay, including annihilation from extended dark matter sources. We consider the HAWC sensitivity to a subset of the sources, including the M31 galaxy, the Virgo cluster, and the Galactic center. We simulate the HAWC response to gamma rays from the sources in well-motivated dark matter annihilation channels. We show the limits HAWC can place on the dark matter cross-section or lifetime from these sources if gamma-ray excess is not observed. In particular, for dark matter annihilating into gauge bosons, HAWC will be able to measure a narrow range of dark matter masses to cross-sections below that expected for a thermal relic. HAWC should also be sensitive to cross-sections higher than thermal for masses up to nearly 1000 TeV. HAWC will be sensitive to decaying dark matter for these masses as well. HAWC can explore higher dark matter masses than are currently constrained.

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