

Limits on Diffuse Dark Matter with HAWC

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In addition to dense regions of dark matter, such as galaxy clusters and dwarf galaxies, dark matter annihilation and decay are also expected to have a nearly isotropic distribution across the sky. This isotropic component is less model-dependent than the flux from isolated dark matter targets, and would produce both galactic and extra-galactic contributions to the Diffuse Gamma-Ray Background (DGRB). With its continuous monitoring of the gamma-ray sky from 300 GeV to 100 TeV and its wide field-of-view, the High Altitude Water Cherenkov (HAWC) observatory is well-suited to search for dark matter contributions in the DGRB. In this work, 535 days of HAWC data and Monte Carlo simulations were studied to set a limit on annihilating or decaying diffuse dark matter at TeV energies. With this data, we consider both leptonic and hadronic dark matter channels and are able to constrain dark matter up to masses >100 TeV.

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