

Abstract Submitted  
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**Searching for the Diffuse Gamma-Ray Background with HAWC**

MORA DUROCHER, Los Alamos National Laboratory, HAWC COLLABORATION — The high-energy Diffuse Gamma-Ray Background (DGRB) is dominated by an isotropic extragalactic emission of gamma rays uncorrelated with any known sources, and potentially dark matter annihilation or decay emissions in galactic structures. While well-characterized at MeV-GeV energies, the DGRB has never been observed at energies above 1 TeV. The High Altitude Water Cherenkov (HAWC) observatory, located in central Mexico at 4100 m above sea level, detects TeV-energy gamma rays and cosmic rays continuously with a wide field-of-view. With its high-energy reach and its large area coverage, HAWC is well-suited to notably improve searches for the DGRB. Using 535 days of HAWC observations and with strict cuts on gamma/hadron separation parameters to better isolate gamma-ray signal from cosmic-ray contamination, we will constrain the DGRB above 10 TeV, as well as discuss prospective implications for multi-messenger and dark matter studies.

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