Abstract Submitted
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An Optimized Search for Dark Matter in the Galactic Halo with HAWC JOSEPH LUNDEEN, Michigan State University — The Galactic Halo is the closest known large dark matter halo and a prime candidate for indirect dark matter detection. The High Altitude Water Cherenkov Observatory (HAWC) is a high energy (300 GeV to 100 TeV) gamma ray detector located in central Mexico. HAWC operates via the water Cherenkov technique and has both a wide (2 sr) field of view and near continuous duty cycle, making it ideal for analysis of highly extended sources. We made use of HAWC's field of view and a background-estimation technique optimized for extended sources to probe a large region of the Galactic Halo for dark matter signals. With these results, we are able to set improved constraints on dark matter annihilation and decay over the HAWC energy range, taking into account electroweak corrections to the gamma-ray spectra. Our constraints also take into account detector simulation systematics and are robust against uncertainties in the Galactic dark matter spatial profile.

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