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Searching for Gamma-Ray Signal from Giant Molecular Clouds with HAWC

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Giant Molecular Clouds (GMC) are large reservoirs of gas and dust in the galaxy, which makes them ideal for the production of gamma-ray emission due to the interaction of cosmic rays with the ambient gas. This gamma-ray emission is part of the galactic diffuse gamma-ray emission, which is useful for tracing the propagation and distribution of cosmic rays throughout our Galaxy. The search of gamma-ray emission from GMCs may allow us to probe the flux of cosmic rays in distant galactic regions and compare it with the local cosmic ray flux measured at Earth.

The High Altitude Water Cherenkov (HAWC) Observatory is located at 4100 m above sea level in Mexico. It is designed to measure high-energy gamma rays between 300 GeV to 100 TeV. HAWC possesses a large field of view of 2 sr and good sensitivity to spatially extended sources, which currently makes it the best suited ground-based observatory to detect extended regions. HAWC data is used to search for gamma-ray emission from Aquila Rift, Hercules and Taurus GMCs. Preliminary results will be presented.

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