

Abstract for an Invited Paper
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Recent Results from Milagro¹

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The Milagro Gamma Ray Observatory, a large field-of-view Water Cerenkov Air Shower Array designed to detect gamma rays near 1 TeV, is particularly suited for studying emission from extended gamma sources or broad structures in cosmic rays. Gamma rays are the best direct probe of cosmic rays outside our solar neighborhood. Gamma-ray emission up to 30GeV from a narrow band along the galactic equator has previously been detected by space-based instruments, notably EGRET. Results will be presented from a completed Milagro analysis giving evidence for TeV gamma ray emission from a mid-longitude region of the Galactic Plane. In a three-year data set with fixed region-of-interest a Milagro signal with a significance of 4.5 standard deviations has been detected above the cosmic ray background. This is interpreted as gamma rays from the interaction of cosmic rays with the interstellar medium at the Galactic equator. New developments from this work, ongoing investigations with a larger data set and different methodologies, will be described. Another study concentrates on the dominant charged cosmic-ray-initiated showers. Cosmic rays impinging on earth are expected to be nearly isotropic in celestial coordinates. Milagro's large aperture makes it an ideal instrument to detect small deviations from isotropy, such as predicted by Compton and Geller in 1935. Preliminary results on an observed anisotropy at levels of order 10^{-3} will be presented.

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