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A New Background Rejection Technique for the Milagro Gamma-Ray Detector

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Abstract content

Milagro is a TeV gamma-ray detector that utilizes a large water Cherenkov detector to observe extensive air showers produced by high energy particles impacting the Earth's atmosphere. Milagro's distinct advantage compared to other TeV gamma-ray detectors is that it views a wide field (2 steradian over-head sky) and it continuously operates (>90% live time). A new background rejection technique that significantly increases the sensitivity of the Milagro detector has been developed. This technique improves the sensitivity of the Milagro detector by more than a factor of 2 over the previous technique (Atkins et al. 2003). This new /newtechnique differentiates between hadronic and gamma-ray showers by looking at the fundamental differences in the shower parameters between these two types of showers and how they register in the detector. These shower parameters include the number of Muons presented in the EAS, the size of the EAS, and some shower reconstruction parameters. This technique resulted in discoveries of localized TeV gamma-ray sources from the Galactic plane. Details of the new technique along with an all-sky TeV gamma-ray map –using this technique– will be presented.

If this papers is presented for a collaboration, please specify the collaboration

Milagro Collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Oliveo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 3 (OG part 2), pages 1421-1424

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