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Search for 1-100 GeV Emission from Gamma-Ray Bursts Using Milagro

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Abstract content

Milagro is a wide field (2 sr) high duty cycle ($>90\%$) ground based water Cherenkov detector built to observe extensive air showers produced by high energy particles interacting in the Earth's atmosphere. Milagro records extensive air showers in the energy range 100 GeV to 100 TeV, as well as the counting rates of the individual photomultiplier tubes in the detector. The individual tube counting rates can be used to detect transient emission above ~ 1 GeV by the temporary increase in secondary shower particles reaching the ground. We have used the counting rate data to search for high energy emission from a sample of about one hundred gamma-ray bursts (GRB) detected since the beginning of 2000 by BATSE, BeppoSax, HETE-2, INTEGRAL, Swift or the IPN. No evidence for emission from the GRBs was found. Considering absorption by the extragalactic background light, upper limits on the fluence at four redshifts are determined for bursts at unknown distances. For bursts with known redshifts, fluence upper limits in the energy range 1-100 GeV as low as $8e-6$ erg cm^{-2} are obtained.

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

Milagro

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, 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 1139-1142

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