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The VERITAS Trigger System

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Abstract content

The VERITAS gamma-ray observatory, situated in southern Arizona, is an array of four 12-m diameter imaging Cherenkov telescopes, each with a 499-pixel photomultiplier-tube camera. The instrument is designed to detect astrophysical gamma rays in excess of 100GeV. At the low end of the VERITAS energy range, fluctuations in the night sky background light and single muons from cosmic-ray showers constitute significant backgrounds. VERITAS employs a three-level trigger system to reduce the rate of these background events: an initial trigger which acts at the single pixel level, a pattern trigger which acts on the relative timing and distribution of pixel-level triggers within a single telescope camera, and an array-level trigger, which requires simultaneous observation of an air-shower event in multiple telescopes. This final coincidence requirement significantly reduces the rate of background events, particularly those due to single muons. In this paper, the specific design and implementation of all levels of the VERITAS trigger system is discussed and their joint performance is characterized.

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

VERITAS

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 1539-1542

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