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Study of gamma-hadron discrimination for the ARGO-YBJ experiment.

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Abstract content

Very High Energy Gamma Astronomy is one of the scientific aims of the ARGO-YBJ experiment (YangBaJing, P.R. China), an extensive air shower detector made of a single layer of Resistive Plate Chambers covering a surface of about 6700 m2. The exploitation of the full coverage approach (93% of active area) together with the very high altitude location (4300 m a.s.l.) allows to put the energy threshold as low as few hundreds of GeV, making ARGO-YBJ competitive with respect to Cherenkov Telescopes, with the advantages of a larger field of view and a duty cycle close to 100%. A gamma ray source is revealed if a statistically significant excess of events is detected from a certain direction above the huge and isotropically distributed background due to the charged cosmic rays. A technique for sorting out the showers induced by gamma primaries from the hadrons-induced ones, combined with a good angular resolution, is a crucial issue for increasing the sensitivity of the detector, allowing to reject as much background as possible. In this paper we discuss the capability of ARGO-YBJ to perform gamma-hadron discrimination on the basis of the very detailed information available -thanks to the high granularity of the detector- on the space-time structure of the electromagnetic component of the shower.

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

ARGO-YBJ Collaboration

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 1503-1506

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