30th International Cosmic Ray Conference

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Study of the long time-scale variability of cosmic rays with the ARGO-YBJ experiment

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Abstract content

The long term modulation of the cosmic ray intensity includes both Sun and celestial anisotropies. The solar activity is due to high energy flares producing a decrease (known as Forbush Decrease, FD) in the cosmic ray intensity, with a time scale of the order of a few days, often accompained by a Ground Level Enhancement, due to direct Sun emission during the solar flare. The celestial anisotropies are due to the Earth motion in the cosmic rays reference system (solar anisotropy: Compton-Getting effect) and to the solar system location inside the Galaxy (sidereal anisotropies). These anisotropies are studied in ground-base experiments by means of EAS arrays, and the high energy solar emission is mainly studied from ground by neutron monitors. In the ARGO-YBJ experiment these phenomena are investigated by means of the "scaler mode" technique: the detector counting rates of four low multiplicity channels from singles to four-fold coincidences are recorded in a fixed time window of 0.5 s. The signal corresponds to a significant enhancement of the observed counting rate, after correcting the data for enviromental and instrumental parameters. In this paper we present the sensitivity of the ARGO-YBJ detector and the first results for both solar physics and cosmic ray anisotropy studies.

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. 1 (SH), pages 621-624

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