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TWO-COMPONENT FEATURES OF THE TWO LARGEST GLEs: 23 FEBRUARY 1956 AND 20 JANUARY 2005

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Abstract content

Comparative analysis of the characteristics of relativistic solar cosmic rays (SCR) in the two largest GLEs of 23 February 1956 and 20 January 2005 has been performed. Using a modeling technique, the parameters of relativistic solar protons (RSP) were obtained from ground-based observations by neutron monitors (NM) and muon detectors. The two particle populations (components), prompt (PC) with high anisotropy and exponential energy spectrum and delayed one (DC) with moderate anisotropy and power-law spectrum, were shown to exist in both cases. The prompt component was a cause of a giant pulse-like increase at a limited number of NM stations, and the DC caused a gradual increase with moderate amplitude at the most NM stations over the globe. It is argued that only exponential energy spectrum (but not power-law one), in combination with energy dependence of the NM specific yield functions, could cause such great increase effect (~5000%) in both cases.

If this papers is presented for a collaboration, please specify the 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 249-252

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