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Latitudinal distribution of galactic cosmic ray density and its effect on the CIR-driven modulations of density and density gradient measured by the Muon detector network

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Abstract content

Richardson et al. [1996] statistically investigated CIR-driven modulations of Galactic Cosmic Ray (GCR) density with the data obtained by satellites. By examining depressions caused by CIRs with and without the Sector Boundary (SBs), they concluded that SBs do not organize the GCR density. On the other hand, a 22-year cycle in the amplitude of depressions was also confirmed. They suggested that this is caused by changes in large-scale heliospheric magnetic field. In order to reveal an effect of the large-scale magnetic field on GCR density distributions, we have investigated a relationship between interplanetary magnetic field and GCR density gradient measured by the Muon detector network. It has been found that GCR density tends to have its maximum (minimum) at SBs when A is positive (negative). We have also investigated individual CIR-driven modulation, distinguishing whether or not CIR includes a SB. Moreover, assuming a slab-shaped modulated region we have deduced the structure reproducing the observed variations of GCR density and density gradient. For 2001-2006 (A is negative), the structure which has its maximum of GCR density along a SB tends to be deduced in case of CIR with a SB. We will report these results.

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 367-370

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