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MATHEMATICAL MODEL OF THE SPORADIC FORBUSH EFFECT OF THE GALACTIC COSMIC RAY INTENSITY

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Abstract content

We propose a non stationary three dimensional (3-D) model based on the transport equation to describe the temporal changes of the rigidity spectrum of the sporadic Forbush effect of galactic cosmic ray intensity observed by neutron monitors and ground meson telescopes (energy range of 5-50 GeV). We show that the main reason of the temporal changes of the rigidity spectrum of the galactic cosmic ray intensity variations during the Forbush effect is the alternation of the dependence of the galactic cosmic ray particles diffusion coefficient on the particles rigidity owing to the existence of the interplanetary magnetic field turbulence. So, there could be observed the similar temporal changes of the rigidity spectrum of the galactic cosmic ray intensity variations for different scales (amplitudes) of the Forbush effects, indicating that the rigidity spectrum of the galactic cosmic ray intensity variations is generally shaped by the interplanetary magnetic field turbulence, but the magnitudes of the Forbush effects can depend on the other parameters of solar wind and solar activity

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 311-314

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