Interaction of the Magnetic Cloud and the Interplanetary Shock with Cosmic Rays

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Forbush decrease (FD) is the event of Galactic Cosmic Ray (GCR) influx rate depression at least 3% within about a day. Previous studies on the solar wind modulator of FD revealed conflicting results. Drift hypothesis group suggested that FDs are caused by smoothly varying interplanetary magnetic field (IMF) in a magnetic tongues, whereas diffusion hypothesis group rather prefers the idea that diffusion is more significant in the turbulent IMF in the sheath region between the interplanetary shock (IPS) and the magnetic cloud (MC). We have selected the FD events with at least 5% flux depression and the MC and the IPS pairs observed in 1998 and 1999. We examined effectiveness of the IMF magnitude and turbulence on FD events. We would also present the preliminary application of this test to the solar cycle modulation of the GCR intensity.