

Galactic Cosmic Rays in the 3-D Heliosphere: Effects of the Current Sheet and the Termination Shock

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The large-scale heliospheric magnetic field (HMF) plays fundamental role in the transport of cosmic rays. The polarity of the field and the structure of the heliospheric current sheet (HCS) determine the pattern of large-scale particle drifts. Another prominent large-scale structure is the termination shock (TS) at which the drift pattern changes and reacceleration of galactic cosmic rays (GCRs) may occur. A significant, perhaps dominant part of cosmic-ray modulation occurs in the heliosheath beyond the termination shock. We overview the basic transport processes in the heiosheath and discuss the effects of the HCS and TS on the modulation and anisotropies of GCRs. Numerical simulation results will be presented. We shall briefly discuss the extension of the large scale HMF into the heliosheath and its implications on the transport of GCRs. The connection between the HCS and cosmic ray anisotropies, particularly those around the limiting rigidity will be discussed.