

The Evolution of the Current Sheet and its Effects on Cosmic Ray Modulation

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The large-scale heliospheric magnetic field (HMF) plays fundamental role in the transport of galactic and anomalous cosmic rays (GCR and ACR) in the heliosphere. The polarity of the field and the structure of the heliospheric current sheet (HCS) determine the pattern of large-scale particle drifts.

We discuss the effects of a continuously changing current sheet on cosmic rays in the outer heliosphere. In our study, the 22-year solar magnetic cycle is crudely represented by a continuous 360° change of the tilt. The polarity reversal around solar maximum then corresponds to the passing of the tilt over 90° . Transient variation due to temporal changes of the current sheet will be addressed.

A significant, perhaps dominant part of cosmic-ray modulation occurs in the heliosheath beyond the termination shock. We briefly discuss the extension of the current sheet and global magnetic field into the heliosheath and possible implications for cosmic-ray modulation.

