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Variation of cosmic rays and solar wind near the heliospheric current sheet

Abstract content

We study the cosmic ray density changes near the heliospheric current sheet, both above and below it during different polarity states of the heliosphere ($A < 0$ and $A > 0$). We analyze the neutron monitor data from several locations on the earth, well distributed in latitude with a range of cut off rigidities. Method of superposed epoch analysis has been applied using sector boundary (current sheet crossing) days as epochs. Simultaneous data of cosmic rays and solar wind parameters has been analyzed to study the role and the relative importance of various parameters in the variation of cosmic ray density near the heliospheric current sheet. The results are consistent with a negative density gradient with displacement in latitude from the current sheet. Study of simultaneous variations in solar wind parameters suggest for the significant role of the solar wind convection in the cosmic ray density distribution near the heliospheric current sheet; however, the response of cosmic rays to the solar wind changes appear to be polarity dependent. Diffusion and drift of particles in the vicinity of heliospheric current sheet has also been discussed

If this paper is presented for a collaboration, please specify the collaboration

Summary

Reference

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