



Contribution ID : 232

Type : Oral

SEP Acceleration at evolving CMEs with changing shock-geometry

Thursday, 5 July 2007 10:54 (0:12)

Abstract content

Gradual solar energetic particle (SEP) events are believed to be accelerated at CME driven shocks. Shocks driven by a realistic CMEs are neither simply quasi-perpendicular nor quasi-parallel: the geometry and the shock strength may constantly change as the CME evolves. The shock is likely to be quasi-parallel when it forms and becomes more parallel at later stages (e.g. Lee and Tylka 2005). The downstream sheath region immediately behind the shock has a structure of its own, which may play a significant role in the SEP acceleration process. We present numerical simulations adopting a Lagrangian scheme which is designed to handle the evolution of the shock. The scheme follows the moving magnetic field lines, which are wrapped around the expanding CME, and are pushed by the ejecta. We present numerical simulation results and discuss their implications.

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 189-190

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Session Classification : SH 1.6, SH 1.7, SH 2.2, SH 2.3

Track Classification : SH.1.7