[JJ] Evening Poster | P (Space and Planetary Sciences) | P-EM Solar-Terrestrial Sciences, Space Electromagnetism & Space Environment

[P-EM19]Heliosphere and Interplanetary Space

convener:Ken Tsubouchi(Tokyo Institute of Technology), Masaki N Nishino(Institute for Space-Earth Environmental Research, Nagoya University), Yasuhiro Nariyuki(富山大学人間発達科学部)
Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
This session aims to secure comprehensive insights into physical processes of plasmas and fields in the heliosphere. Presentations of the recent studies from any approaches (integrated observation/theoretical modeling/massive numerical simulation) are welcomed. Topics are not restricted to any specific issues: phenomenological studies on solar flares/CME/solar wind, and related fundamental physics problems such as shocks/waves/turbulence/particle transport and acceleration can be the main target, including heliospheric high-energy phenomena and their impact on the Earth's environment.

[PEM19-P03]Analysis of interplanetary flux ropes with an internal shock

*Katsuhide Marubashi[1], Hiromitsu Ishibashi[1] (1.National Institute of Information and Communications Technology)
Keywords:interplanetary magnetic flux rope, internal shock wave, model-fitting analysis

Geometries of interplanetary magnetic flux ropes (IFRs) are generally determined by model-fitting methods. There are many cases where an IFR includes an internal shock. In such cases, any simple model-fitting analysis cannot be used. In this study, we attempt to retrieve the original solar wind parameters by eliminating the shock effects. We first determine the shock normal of the internal shock, and calculate the unshocked parameters by using the shock-jump conditions. Once the above preparations are finished, the IFR geometries can be obtained by ordinary fitting methods. The present analysis method is based on two important assumptions: (1) the shock normal is maintained during propagation, and (2) changes in physical quantities by the passage of the shock are also maintained. Here we perform the above analysis for some selected IFR examples. It is seen that the above analysis method is successful and that the two assumptions are acceptable. The method significantly improve the applicability of the existing model-fitting methods.