[구SE-03] Problems in Identification of ICMEs and Magnetic Clouds

Katsuhide Marubashi[1], Yeon-Han Kim[1], Kyung-Suk Cho[1], Young-Deuk Park[1], Kyu-Cheol Choi[1,2], Ji-Hye Baek[1], and Seonghwan Choi[1]
[1]*Solar and Space Weather Research Group, Korea Astronomy and Space Science Institute*
[2]*Department Astronomy and Space Science, Chungbuk National University*

This work is a part of our project to establish a Website which provides a list of magnetic clouds (MCs) identified by WIND and ACE spacecraft. MCs are characterized by their magnetic fields that are well described by magnetic flux rope structures, whereas interplanetary coronal mass ejections (ICMEs) are interplanetary manifestations of coronal mass ejections (CMEs), usually identified by differences of plasma and magnetic field characteristics from those in the background solar wind. It is widely accepted that, while MCs are generally identified within ICMEs, the number of MCs are significantly lower than the number of ICMEs. In our effort to identify MCs, however, we have found that there was a big problem in identification method of MCs in previous works. Generally speaking, most of the previous surveys failed in identifying MCs which encounter the spacecraft at large distances from the MC axis, or near the surface of MC structures. In our survey, MCs are identified as the region of which magnetic fields are well described by appropriate flux rope models. Thus, we could selected over 45 MCs, in 1999 solar wind data for instance, while 33 ICMEs are listed in the Website of the ACE Science Center reported by Richardson and Cane.

[구SE-04] A time-dependent propagation of nonlinear magnetosonic waves in the interplanetary space with solar wind.

Kyung-Im Kim[1], Dong-Hun Lee[1], Khan-Hyuk Kim[1], Kihong Kim[2]
[1]*School of Space Research, Kyung Hee University, Kyunggi, Korea,*
[2]*Division of Energy Systems Research, Ajou University, Suwon, Korea*

A magnetosonic wave is a longitudinal wave propagating perpendicularly to the magnetic fields and involves compression and rarefaction of the plasma. Lee and Kim (2000) investigated the theoretical solution for the evolution of nonlinear magnetosonic waves in the homogeneous space which adopt the approach of simple waves. We confirm the solution using a one-dimensional MHD code with Total Variation Diminishing (TVD) scheme. Then we apply the solution for the solar wind profiles. We examined the properties of nonlinear waves for the various initial perturbations at near the Lagrangian (L1) point. Also we describe waves steepening process while the shock is being formed by assuming different timescales for a driving source.