are regarded as one of the most powerful sources of space weather disturbances observed near the Earth orbit (1 AU). In this study, we aim at investigating the relation between these disturbances and the physical properties of an ICME. Toward this end, we used an spheromak-type ICME and performed a series of three-dimensional magnetohydrodynamic (MHD) simulations with different sets of ICME parameters. The ICME is injected into the background solar wind generated from near-Sun data and interplanetary scintillation (IPS) data via an MHD-IPS tomography method. We will compare simulation results to in situ observations near the Earth and discuss how the physical properties of an ICME affect the space weather disturbances at 1 AU.

[구 SS-03] Stability Analysis of the Magnetic Structures Producing an M6.5 Flare in active region 12371

Jihye Kang[1], Satoshi Inoue[2], Kanya Kusano[2], Sung-Hong Park[2] and Yong-Jae Moon[1]
[1]*Department of Astronomy and Space Science, Kyung Hee University*
[2]*Institute for Space-Earth Environmental, Nagoya University*

The stability analysis of coronal magnetic structures is important for studying the initiation of solar flares and eruptions. In order to understand the flare onset process, we first reconstructed the 3D coronal magnetic structures of active region 12371 with an M6.5 flare using a nonlinear force-free field (NLFFF) model based on vector magnetic fields. The NLFFFs successfully produce the observed sigmoidal structure which is composed of two branches of sheared arcade loops. The stability analysis were examined for three representative MHD instabilities: the kink, the torus, and the double arc instabilities. Our stability analysis shows that the two branches of sheared arcade loops are quite stable against the kink and torus instabilities, but unstable against the double arc instability before the flare occurrence. Finally, we discuss a probable onset process of the M6.5 flare.

[구 SS-04] Subsurface origin of merging and fragmentation in AR10930

Tetsuya Magara[1,2]
[1]*School of Space Research, Kyung Hee University,*
[2]*Department of Astronomy and Space Science, Kyung Hee University*

The aim of this study is to demonstrate the subsurface origin of the complex observed evolution of the solar active region 10930 (AR10930) associated with merging and breakup of magnetic polarity regions at the solar surface. This is important for a comprehensive understanding of observed properties of the active region, because subsurface magnetic flux and subsurface dynamical processes are seamlessly connected to surface magnetic flux and surface dynamical processes, respectively. In other words, the solar surface does not behave as an impermeable boundary towards magnetic flux and dynamical processes.

In this talk, we show a magnetohydrodynamic (MHD) model of merging and fragmentation in AR10930. We then discuss what physical processes could be involved in the characteristic evolution of an active region magnetic field that leads to the formation of a sunspot surrounded by satellite polarity regions.

[구 SS-05] Origin and formation mechanism of LASCO-C2 post CME blobs observed on 2017 September 10

Jae-Ok Lee[1], Kyung-Suk Cho[1], and Kyoung-Sun Lee[2]
[1]*Korea Astronomy and Space Science Institute,*
[2]*Center for Space Plasma and Aeronomic Research, University of Alabama in Huntsville*

To find out the origin and formation mechanism of LASCO-C2 post-CME blobs, we investigate 2 LASCO-C2 blobs and 35 low corona blobs observed by K-Cor on 2017 September 10 from 17:11 to 18:58 UT. By visual inspection of a post-CME ray and the locations of low corona blobs in K-Cor and LASCO-C2 images with examining the time-height data of all blobs, we find the following results: (1) The post-CME ray structure is well identified in the K-Cor images than LASCO-C2 ones. (2) Low corona blobs can be classified into two groups according to their formation mechanisms: 27 blobs belong to Group 1, generated by the tearing mode instability near the middles of current sheets as described by Furth et al., 1963; Shibata & Tanuma, 2001; Shen et al., 2011, the others belong to Group 2, formed by the tearing mode instability near the tips of current sheets as shown in Figure 5 of Sitnov et al., 2002. (3) Group 1 has low initial appearance heights <1.30 Rs>, broad speed range (38 ~ 945 km/s), and high accelerations <4,272 m/s^2> than Group 2, which has initial appearance heights <1.72 Rs>, speed range (579 ~ 843 km/s), and accelerations <1,413 m/s^2>. (4) among 8 blobs for Group 2, only 2 blobs are temporally and spatially associated with 2 LASCO-C2 ones and their initial observation heights are 1.93 and 1.79