

[박SE-01] Development of Fast Imaging Solar Spectrograph and Observation of the Solar Chromosphere

Hyungmin Park¹

¹ *Astronomy Program, Seoul National University*

It is well known that chromospheric features are fine structured, short lived, and dynamic. Spectrograph-based observation have obvious advantage of getting physical properties of solar chromosphere than filter-based one. We developed and installed Fast Imaging Solar Spectrograph (FISS) attached on New Solar Telescope in Big Bear Solar Observatory. FISS have capabilities to take data with high time, spatial and spectral resolution at two wavelengths(Ha 6563Å and CaII 8542Å) simultaneously. After FISS installation, we observed various chromospheric features : active regions, quiet regions, filaments/prominences and so on. As one of chromospheric studies, we analyzed solar prominences and got physical parameters by using simple radiative transfer modeling. The ranges of temperature and non-thermal velocities are found to be 7500-13000K and 5-11km/s, respectively.

[조SE-02] Simultaneous Forbush Decrease caused by a CME shot by the STEREO

Suyeon Oh¹, Yu Yi¹

¹ *Chungnam National University, Department of Astronomy and Space Science*

The sudden decrease of galactic cosmic ray (GCR) intensity observed by ground neutron monitor (NM) is called a Forbush decrease (FD) event. The intensity time profile of FD event looks like the geomagnetic storm visualized by geomagnetic storm index Dst. Oh et al. [2008] and Oh and Yi [2009] classified the FD events into two kinds by criteria of the overlapping simultaneity of main phase in universal time (UT). The FD event is defined simultaneous if the main phase parts observed by the stations distributed evenly around the Earth are overlapped in UT and non-simultaneous if ones are overlapped in each station's local time (LT). They suggested the occurrence mechanisms of two kind FD events related to the interplanetary magnetic structures such as the interplanetary shock (IP shock) and magnetic cloud. According to their model, the simultaneity of FD depends on the strength and propagation direction of interactive magnetic structures overtaking the Earth. Now the STEREO mission can visualize the emergence and propagation direction of the coronal mass ejection (CME) in 3-dimension in the heliosphere. Thus, it is possible to test the suggested mechanisms causing two different types of FD events. One simultaneous FD observed on February 17, 2011 may be caused by a CME heading directly toward the Earth observed on February 15, 2011 by the STEREO mission. The simultaneity of FD event is proved to be a useful analysis tool in figuring out the geo-effectiveness of solar events such as interplanetary CMEs and IP shocks.