[구SE-11] A small-scale H-alpha eruption in the north polar limb of the Sun observed by New Solar Telescope

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The New Solar Telescope (NST) at Big Bear Solar Observatory (BBSO) is the recently constructed world largest 1.6 m optical solar telescope on the ground. We took an observation of the north polar limb in H-alpha line center wavelength on 2009 August 26 with the instrument at Nasmyth focus of the NST and found a remarkable small-scale H-alpha eruption from 18:20 UT and 18:45 UT. The eruption occurred with a relatively slow speed of about 10 km/s in early stage and a slight acceleration up to 20-30 km/s in later stage. We also found that the eruption shows a deflection along the pre-existing magnetic field as well as several interesting features such as bifurcation, rotation, horizontal oscillation, and direction and thickness change of its structure during the eruption. In this talk, we will report the observational properties of the small-scale eruption observed by the NST and discuss their implication on magnetic reconnection.

[구SE-12] Magnetic Helicity Injection in Solar Active Regions Related to the CME Initiation and Speed

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Magnetic helicity injection in 28 solar active regions producing 46 CMEs was investigated to find its relationship with the occurrence and speed of CMEs. The helicity injection in the active regions under investigation was calculated using full-disk 96 minute MDI magnetograms. The major findings of this study are as follows. First, the 46 CMEs are categorized into two different groups by two characteristic evolution patterns of helicity injection in their active regions: (1) a monotonically increasing of helicity accumulation (Group A; 30 CMEs in 23 active regions) and (2) significant helicity injection followed by its sign reversal (Group B; 16 CMEs in 5 active regions). Second, a fairly good correlation between the helicity injection rate and the CME speed is found for the 30 CME events in Group A. Further statistical studies, however, are needed to check whether the two characteristic helicity patterns are shown in other CME-productive active regions.