by the evolution of the fine-scale magnetic discontinuity in the photosphere

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We report a small-scale EUV bright loop associated with the evolution of the fine-scale magnetic discontinuity in the photosphere. Our analysis was carried out by using the high spatial resolution data taken with InfraRed Imaging Magnetograph (IRIM) and the Fast Imaging Solar Spectrograph (FISS). As a result, an extremely narrow dark lane of the intense horizontal magnetic field (width ~ 300 km) is detected parallel to the boundary of the magnetic pore, which is one of the footpoints of the small-scale bright coronal loop. We find that the variation of the net linear polarization inside the dark lane is closely related to the intensity variations of the coronal loop. Based on our results, we suggest that small-scale atmospheric heating such as bright coronal loop seen above the complex pore group may be strongly affected by the evolution of the fine-scale magnetic discontinuity in the photosphere. This is a nice example of solar atmospheric heatings associated with the fine-scale magnetic discontinuity in the photosphere.

[포 SS-06] Mass and energy of erupting plasma associated with a coronal mass ejection in X-rays and EUV

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We investigate the mass and energy of erupting plasma observed in X-rays and EUV, which is associated with a coronal mass ejection (CME) and an X-class flare. The erupting plasma was observed by both the X-ray telescope (XRT) on Hinode and the Atmospheric Imaging Assembly (AIA) on Solar Dynamic Observatory (SDO). We estimate the emission measures of the erupting plasma using a differential emission measure method. The plasma erupts with a loop-like structure in X-ray and EUV. We estimate the mass of erupting plasma assuming a cylinder structure. In addition, we estimate the radiative loss, thermal conduction, thermal, and kinetic energies of the eruptive hot plasma. We find that the thermal conduction timescale is much shorter than the duration of the eruption. This result implies that additional heating during the eruption may be required to explain the hot plasma observations in X-rays.

[포 SS-07] Spin and shape analysis for the Mars-crossing asteroid 2078 Nanking

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The YORP effect is non-gravitational force that changes the spin-status of asteroid. So far this effect has been directly detected only from the Near-Earth asteroids (Taylor et al. 2007; Lowry et al. 2007, 2014; Breiter et al. 2011; Durech et al. 2008, 2012). Pravec at el. 2008 found the evidences for changing spin rate of small asteroids (3 - 15 km) by the YORP effect in the Main-Belt and Mars-crossing asteroids. The Mars-crossing asteroids ($1.3 < q < 1.66$ AU) are objects that cross orbit of the Mars. The Mars-crossing asteroids are regarded as one of the main sources for the Near-Earth asteroids. We expect that rotation of Mars-crossing asteroids would be influenced by the YORP effect. We try to search observational evidence of the YORP effect for the Mars-crossing asteroid. Our target 2078 Nanking is a population of the Mars-crossing asteroid. First light-curve of 2078 Nanking was obtained from Mohamed et al. 1994, and Warner et al. 2015 recently published new observational data. We observed this asteroid on 26th Nov. 2014 and 17th Jan. 2015 using SOAO (Sobaeksan Optical Astronomy Observatory) 0.61 m telescope with 4K CCD. Using light-curve inversion method (Kaasalainen & Torppa 2001; Kaasalainen et al. 2001), we try to determine the pole orientation and shape model of this asteroid based on the combination of our light-curve and literature photometric data. Knowing spin parameters, such as rotational period and spin axis, are essential for studying the YORP effect. In this presentation, we provide some preliminary results of our recent study: light-curve and processing of shape modeling of 2078 Nanking. We