an effective diameter of 3.2 m and built as seven 1.1 m diameter circular segments, which are conjugated 1:1 to the seven 8.4m segments of the primary. Each FSM segment contains a tip-tilt capability for fine co-alignment of the telescope subapertures and fast guiding to attenuate telescope wind shake and mount control jitter. This tip-tilt capability thus enhances performance of the telescope in the seeing limited observation mode. As the first stage of the FSM development, KASI conducted a Phase 0 study to develop a program plan detailing the design and manufacturing process for the seven FSM segments. The GMTO-KASI team matured this plan via an internal review in May 2016 and the revised plan was further assessed by an external review in June 2016. In this poster, we present the technical aspects of the FSM development plan.

태양/태양계/우주과학

[포 SS-01] Relation of CME Speed and Magnetic Helicity in the Source Region during Increasing Phase of Solar Cycle 24

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We examined the relations between CME speed and properties of magnetic helicity in the source region such as helicity injection rate and total unsigned magnetic flux, which reflect the magnetic energy in the active region. For this, we selected 22 CMEs occurred during the increasing phase of solar cycle 24, which shows extremely low activities and classified them into two groups according to evolution pattern of helicity injection rate. We then compared the relations with those from previous study based on the events in solar cycle 23. As the results, we found several properties as follows: (1) Both of CME speed and helicity parameters have very small values since we only considered increasing phase; (2) among 22 CMEs, only 6 events (27%) are classified as group B, which show sign reversal of helicity injection and they follow behind of appearance of group A events. This fact is well coincide with the trend of solar cycle 23 that only group A events was observed in the first 3 years of the period; (3) as the solar activity is increasing, the CME speed and helicity parameters are also increasing. Based on the observations of solar cycle 23, the helicity parameters was still increasing in spite of decreasing solar activity after maximum period.

[포 SS-02] The solar cyclic variation of photospheric intensity analyzed from solar images

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The Sun has diverse variations in solar atmosphere's layers due to solar activity. This solar variations can be recognized easily by sunspots which appear on the solar photosphere. Thus the sunspot on the photosphere is utilized by direct index of the solar activity. The other variation of the photosphere is center-to-limb variation (CLV). In this study, we analyze the relative intensity observed by SOHO, SDO. The data of photospheric intensity are from full disk images of SOHO/MDI intensity (6768Å, from May 1994 to March 2011) and of SDO/HMI intensity (6173-6174Å, from May 2010 to June 2016). As the result, we found the latitudinal variation of the intensity. The daily photospheric intensity showed the solar cyclic variation with sunspot number. It has a little difference of phase with sunspot number.

[포 SS-03] Quantitative estimation of the energy ux during an explosive chromospheric evaporation in a white light are kernel observed by Hinode, IRIS, SDO, and RHESSI

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An X1.6 flare occurred in AR 12192 on 2014 October 22 around 14:06 UT and was observed by Hinode, IRIS, SDO and RHESSI. We analyze a bright kernel which produces a white light flare (WLF) with continuum enhancement and a hard X-ray (HXR) peak. Taking advantage of the spectroscopic observations of IRIS and EIS, we measure the

temporal variation of the plasma properties in the bright kernel in the chromosphere and corona. We found that explosive evaporation was observed when the WLF occurred, even though the intensity enhancement in hotter lines is quite weak. The temporal correlation of the WLF, HXR peak, and evaporation flows indicates that the WLF was produced by accelerated electrons. To understand the white light emission processes, we calculated the deposited energy flux from the non-thermal electrons observed by RHESSI and compared it to the dissipated energy estimated from the chromospheric lines (Mg II triplet) observed by IRIS. The deposited energy flux from the non-thermal electrons is about 3.1 x 10^{10} erg cm^{-2} s^{-1} when we assume a cut-off energy of 20 keV. The estimated energy flux from the temperature changes in the chromosphere measured from the Mg II subordinate line is about 4.6 - 6.7 x 10^{9} erg cm^{-2} s^{-1}, 15 - 22 % of the deposited energy. By comparison of these estimated energy fluxes we conclude that the continuum enhancement was directly produced by the non-thermal electrons.

[포 SS-04] A Possibility of Modulating the Geomagnetic Field by the Solar Eclipse

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The solar eclipse affects terrestrial environments in various aspects. For instance, it is well known that the electron concentration and current density decrease in the ionosphere due to the reduction of solar irradiation during solar eclipse. In this study, we carry out the statistical analysis of x, y, z, H-components, and the intensity of the geomagnetic field using the ground based geomagnetic data observed during the solar eclipses from 1991 to 2016. First, we confirm that characteristic decreases in the x and H-components can be seen in the vicinity of the maximum eclipse time at the observing site. Second, we find that the decrease in x and H-components is more conspicuous during the total solar eclipse rather than the partial or annular eclipses. We also find that such a dip is likely to be noticed when the observing site locates in the second half compared to the first half of the eclipse path, as well as when the eclipse occurs in dusk side than in dawn side. Third, we find that reductions in the ground geomagnetic field by the solar eclipse are more evident in the ascending phase of the solar cycle than in the descending phase. Finally, we briefly discuss implications of our findings.