the Ha line and Ca II 8542 line taken by the FISS

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Measuring radiative loss from the solar chromospheric lines like Ha line, Ca II 8542 line helps to infer the exact amount of non-thermal heating in the solar atmosphere. By courtesy of the multi-layer spectral inversion, it is able to determine the radiative loss in the upper and lower chromosphere. Consequently, we found that the radiative loss is around 10 kW/m^2, which is consistent with previous studies. Comparing the radiative loss at the upper and lower chromosphere, the loss at the lower chromosphere is larger than that of upper chromosphere and tends to spread all over the field of view while the loss in the upper chromosphere tends to be localized. We hope to find a hint for specific non-thermal heating process to explain the chromospheric radiative loss.

[포 SS-02] Optical telescope with spectro-polarimetric camera on the moon

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A Lunar observatory not only provides ideas and experiences for space settlements from the Moon to Mars, but also puts the telescope in an optimal position to compete with space telescopes. Earth observation on the Moon's surface has the advantage of no atmospheric scattering or light pollution and is a stable fuel-free observation platform, allowing all longitude and latitude of the Earth to be observed for a month. Observing the entire globe with a single observation instrument, which has never been attempted before, and calculating the global albedo will significantly help predict the weather and climate change. Spectropolarimetric observations can reveal the physical and chemical properties of the Earth's atmosphere, track the global distribution and migration path of aerosols and air pollutants, and can also help detect very small space debris of which the risk has increased recently. In addition, the zodiacal light, which is difficult to observe from Earth, is very easy to observe from the lunar observatory, so it will be an opportunity to reveal the origin of the solar system and take a step closer to understanding the exoplanet system. In conclusion, building and developing a lunar observatory will be a groundbreaking study to become the world's leader that we have never tried before as a first step in expanding human experience and intelligence.

[포 SS-03] Spectroscopic Detection of Alfvénic Waves in Chromospheric Mottles of a Solar Quiet Region

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We present high resolution spectroscopic observations of transverse magnetohydrodynamic (MHD) waves in mottles located near the solar disk center. Different from previous studies that used transversal displacements of the mottles in the imaging data, we investigated the line-of-sight (LOS) velocity oscillations of the mottles in the spectral data. The observations were carried out by using the Fast Imaging Solar Spectrograph of the 1.6 meter Goode Solar Telescope of Big Bear Solar Observatory. Utilizing the spectral data of the Hα and Ca II 8542 Å lines, we measure the LOS velocity of a quiet region including the mottles and rosettes that correspond to the footpoints of the mottles. Our major findings are as follows: (1) Alfvénic waves are pervasive in the mottles. (2) The dominant period of the waves is 2 to 4 minutes. (3) From the time-distance maps of the three-minute filtered LOS velocity constructed along the mottles, it is revealed that the transverse waves in the mottles are closely related to the longitudinal waves in the rosettes. Our findings support the notion that Alfvénic waves can be generated by mode conversion of the slow magnetoacoustic waves as was shown in sunspot regions by Chae et al. (2021).

[포 SS-04] CODEX Filter Configuration

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Coronal Diagnostic Experiment (CODEX) is a diagnostic coronagraph developed by the Korea Astronomy and Space Science Institute and the NASA Goddard Space Flight Center (GSFC) to be