Relative Error (RE), but the values are quite small. Fourth, considering CC and RE together, 1600 and 1700 photospheric UV line images, which have quite similar structures to the corresponding magnetogram, have the best results compared to other lines. This methodology can be applicable to many scientific fields that use several different filter images.

[포 SS-04] Global Mapping of Saturnian Haze

Jaekyun Park[1], Sang Joon Kim[1], Henrik Melin[2], Tom S. Stallard[2]
[1]School of Space Research, Kyung Hee University, Republic of Korea, [2]Department of Physics and Astronomy, University of Leicester, United Kingdom

Recent analyses of spectro-images of Saturn observed by Visual and Infrared Mapping Spectrometer (VIMS)/Cassini revealed altitudinal distributions of the spectral structure of haze in Saturn's south-polar regions (Kim et al., 2018) and at 55°N latitude (Kim et al., 2012). However, other regions of Saturn still have not been investigated. We derived series of high-spatial resolution VIMS images of Saturn's limb at various latitudes. Using our developed code, the altitudinal intensity profiles of 3.3-μm emission and H3+ through different latitudes were plotted. Then we obtained the averaged vertical spectra of 3.3-μm emission which is all blended with fluorescent methane and hydrocarbon haze. The vertically-resolved spectra were measured from the limb of Saturn in 50km intervals to see altitudinal variance. We will present a comparison of spectral structures of 3.3-μm emission with different latitudes. Further investigation using radiative transfer to extract adjacent fluorescent CH4, C2H6, and H3+ is needed to derive spectral structure of pure haze. We look forward to a better understanding of aging process in a global view.

[포 SS-05] COronal Diagnostic EXperiment (CODEX)

Su-Chan Bong[1], Yeon-Han Kim[1], Seonghwan Choi[1], Kyung-Suk Cho[1], Jeffrey S, Newmark[2], Natchimuthuk Gopalswamy[2], Qian Gong[2], Nelson L. Reginald[2], Orville Chris St. Cyr[2], Nicholeen M. Viall[2], Seiji Yashiro[2], Linda D. Thompson[2], Leonard Strachan[3]
[1]Korea Astronomy and Space Science Institute, Korea, [2]NASA Goddard Space Flight Center, USA, [3]Naval Research Laboratory, USA

Korea Astronomy and Space Science Institute (KASI), in collaboration with the NASA Goddard Sparce Flight Center (GSFC), will develop a next generation coronagraph for the International Space Station (ISS). COronal Diagnostic EXperiment (CODEX) uses multiple filters to obtain simultaneous measurements of electron density, temperature, and velocity within a single instrument. CODEX's regular, systematic, comprehensive dataset will test theories of solar wind acceleration and source, as well as serve to validate and enable improvement of space-weather/operational models in the crucial source region of the solar wind. CODEX subsystems include the coronagraph, pointing system, command and data handling (C&DH) electronics, and power distribution unit. CODEX is integrated onto a standard interface which provides power and communication. All full resolution images are telemeters to the ground, where data from multiple images and sequences are co-added, spatially binned, and ratioed as needed for analysis.

[포 SS-06] GENERATION OF FUTURE MAGNETOGRAMS FROM PREVIOUS SDO/HMI DATA USING DEEP LEARNING

Seonggyeong Jeon[1], Yong-Jae Moon[1,2], Eunsu Park[1], Kyungin Shin[1], TaeyoungKim[1,3]
*[1]School of Space Research, Kyung Hee University
[2]Department of Astronomy and Space Science, Kyung Hee University
[3]InSpace Co., Ltd.*

In this study, we generate future full disk magnetograms in 12, 24, 36 and 48 hours advance from SDO/HMI images using deep learning. To perform this generation, we apply the convolutional generative adversarial network (cGAN) algorithm to a series of SDO/HMI magnetograms. We use SDO/HMI data from 2011 to 2016 for training four models. The models make AI-generated images for 2017 HMI data and compare them with the actual HMI magnetograms for evaluation. The AI-generated images by each model are very similar to the actual images. The average correlation coefficient between the two images for about 600 data sets are about 0.85 for four models. We are examining hundreds of active regions for more detail comparison. In the future we will use pix2pix HD and video2video translation networks for image prediction.

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[포 SS-07] Taxonomic Classification of Asteroids Using KMTNet Data to Identify Asteroid Families

Sangho Choi, Howoo Chiang, and Young-Jong Sohn
[1]Department of Astronomy, Yonsei Universe, Seoul 03722, Korea

Identifying asteroid families, which are groups of asteroids with similar orbital properties, is important for understanding the formation and evolution of the solar system, and probing the origins of Near-Earth Objects (NEOs). Although asteroid taxonomy can be used to identify and refine asteroid families, there are numerous asteroids which are not taxonomically classified yet. Korea Microlensing Telescope Network (KMTNet) can be useful to investigate types of that asteroids, because the telescope can observe a number of asteroids at once by its large field of view. Using KMTNet data, we confirmed that the taxonomic classification of the asteroids is possible by plotting color-color diagram. There is a clear division between C-type and S-type, but ambiguous division between C-type and X-type. In the future, we will observe and classify asteroids which are not classified yet and utilize the data to identify and refine asteroid families.

[포 SS-08] Stability of a magnetic structure producing an M6.5 flare in the active region 12371

Jihye Kang[1], Satoshi Inoue[2], Kanya Kusano[2], Sung-Hong Park[2], Yong-Jae Moon[1]
[1]Department of Astronomy and Space Science, Kyung Hee University
[2]Institute for Space-Earth Environmental, Nagoya University

We study the stability of the magnetic structure in active region (AR) 12371 producing an M6.5 flare on June 22 2015. We first perform a nonlinear force-free fields (NLFFFs) extrapolation to derive three-dimensional (3D) magnetic fields based on time series of observed photospheric magnetic fields. The NLFFFs well describe an observed sigmoidal structure with the shape of a double arc magnetic configuration. Next, we examine three possible instabilities (kink, torus, and double arc) to investigate how the M6.5 flare is triggered in the double arc loops. Consequently, the double arc loops are stable against kink and torus instabilities, but possibly unstable against the double arc instability before the flare occurrence. Finally, we discuss a probable scenario for the M6.5 flare.

항성/항성계/외계행성

[포 SA-01] Spectroscopic and Photometric Investigation of BS Cassiopeiae

Min-Ji Jeong[1], Chun-Hwey Kim[1,2], Kyeongsoo Hong[3], Jang-Ho Park[1,4], Joh Na Yoon[1,2], Jae Woo Lee[4], Wonyong Han[4], Mi-Hwa Song[1]
[1]Department of Astronomy and Space Science, Chungbuk National University, Cheongju, Korea
[2]Chungbuk National University Observatory, Jinchun, Korea
[3]Institute for Astrophysics, Chungbuk National University, Cheongju, Korea
[4]Korea Astronomy and Space Science Institute, Daejeon, Korea

New high-resolution spectra and multi-band photometric data of BS Cas were obtained at the Bohyunsan Optical Astronomy Observatory in 2018 and at the Jincheon Station of the Chungbuk National University Observatory in 2011, respectively. We measured the radial velocities (RVs) for both components, and the effective temperature of the more massive star was determined to be 6262 ± 56 K. In addition, historical light curves showed strong time-dependant light variations at the total eclipse. These variations were modeled by a cool spot on the more massive component. Finally, the physical parameters of BS Cas by a simultaneous analysis of our RV curves with the photometric light curves were presented. Individual masses and radii of both components were deduced as M_1= 0.59±0.07 $M_\odot$, M_2=1.47±0.15$M_\odot$, R_1=0.94±0.03$R_\odot$ and R_2=1.47±0.05$R_\odot$.

[포 SA-02] Multi-color Light Curves of the Distant Dwarf Nova KSP-OT-201611a Discovered by the KMTNet Supernova Program

Youngdae Lee[1] (이영대), Dae-Sik Moon[2] (문대식), Sang Chul Kim[1,3] (김상철), Hong Soo Park[1,3] (박홍수), Sang-Mok Cha[1,4] (차상목), Yongseok Lee[1,4] (이용석)
[1]Korea Astronomy and Space Science Institute, 776, Daedeokdae-ro, Yuseong-gu, Daejeon 34055, Republic of Korea, [2]Department of Astronomy and Astrophysics, University of Toronto, St. George, Toronto, ON M5S 3H4, Canada, [3]Korea University