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

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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

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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

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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 $M_1 = 0.59 \pm 0.07 M_{\odot}$, $M_2 = 1.47 \pm 0.15 M_{\odot}$, $R_1 = 0.94 \pm 0.03 R_{\odot}$ and $R_2 = 1.47 \pm 0.05 R_{\odot}$.

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

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