

eruptive events using the MHD as well as the NLFFF model results.

[포 SS-02] BITSE Preliminary Results

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The Balloon-borne Investigation of Temperature and Speed of Electrons in the corona (BITSE) is a technology demonstration mission launched in 2019 to observe the solar corona from ~3 Rs to 15 Rs at four wavelengths (393.5, 405.0, 398.7, and 423.4 nm). Preliminary analysis shows that BITSE imaged the solar minimum corona with the equatorial streamers on the east and west limbs. The narrow streamers observed by BITSE are in good agreement with the geometric properties obtained by the Solar and Heliospheric Observatory (SOHO) coronagraphs in the overlapping physical domain. In spite of the small signal-to-noise ratio we were able to obtain the temperature and flow speed of the western steamer. In the heliocentric distance range 4 - 7 Rs on the western steamer, we obtained a temperature of $\sim 1.0 \pm 0.3$ MK and a flow speed of ~ 260 km s⁻¹ with a large uncertainty interval.

[포 SS-03] Can AI-generated EUV images be used for determining DEMs of solar corona?

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In this study, we determinate the differential emission measure(DEM) of solar corona using three SDO/AIA EUV channel images and three AI-generated ones. To generate the AI-generated images, we apply a deep learning model based on multi-layer perceptrons by assuming that all pixels in solar EUV images are independent of one

another. For the input data, we use three SDO/AIA EUV channels (171, 193, and 211). For the target data, we use other three SDO/AIA EUV channels (94, 131, and 335). We train the model using 358 pairs of SDO/AIA EUV images at every 00:00 UT in 2011. We use SDO/AIA pixels within 1.2 solar radii to consider not only the solar disk but also above the limb. We apply our model to several brightening patches and loops in SDO/AIA images for the determination of DEMs. Our main results from this study are as follows. First, our model successfully generates three solar EUV channel images using the other three channel images. Second, the noises in the AI-generated EUV channel images are greatly reduced compared to the original target ones. Third, the estimated DEMs using three SDO/AIA images and three AI-generated ones are similar to those using three SDO/AIA images and three stacked (50 frames) ones. These results imply that our deep learning model is able to analyze temperature response functions of SDO/AIA channel images, showing a sufficient possibility that AI-generated data can be used for multi-wavelength studies of various scientific fields.

SDO: Solar Dynamics Observatory
AIA: Atmospheric Imaging Assembly
EUV: Extreme Ultra Violet
DEM: Differential Emission Measure

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기타

[포 HA-01] Current Status and Future Prospects of Korean VLBI Network (KVN)

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The Korean VLBI Network (KVN) consists of three 21m radio telescopes installed in Seoul, Ulsan, and Jeju Island with the world's first 4-channel receiver that can observe four different frequencies (e.g., 22, 43, 86, 129 GHz) simultaneously. This receiving system of KVN is particularly effective in millimeter-wavelength VLBI (mm-VLBI) observations by compensating fast atmospheric fluctuations effectively. This technology is now being enhanced with a compact triple-band receiver, becoming the world standard for a mm-VLBI system. In 2020, KVN supported 54 observing programs (KVN: 28, EAVN: 26) including the 2nd KVN Key Science Program (KSP) which supports 8Gbps data recording rate and the East Asian VLBI Network (EAVN) programs. KVN also participated in the European VLBI Network (EVN) and GMVA (Global Millimeter VLBI Array) sessions regularly. Here, we report current status and future prospects of KVN.

[포 HA-02] OWL-Net: A global network of robotic telescopes

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OWL-Net (Optical Wide-field patrol Network) is the first space situational awareness facility of its kind in South Korea which consists of five identical 0.5 m wide-field telescopes with 4K by 4K CCDs. The five stations are located in Mongolia, Morocco, Israel, United States, and South Korea. They are being operated in fully autonomous mode with the minimum human intervention. The primary objective of OWL-Net is to track Korean domestic satellites. In addition, it can be possible to conduct time-series photometry of bright solar system objects. We will present the system overview of the OWL-Net telescopes and progress report.

[포 HA-03] SkyMapper Optical Follow-up of Gravitational Wave Triggers: Overview of Alert Science Data Pipeline (AlertSDP)

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SkyMapper is the largest-aperture optical

wide-field telescope in Australia and can be used for transient detection in the Southern sky. Reference images from its Southern Survey cover the sky at $\delta < +10$ deg to a depth of $I \sim 20$ mag. It has been used for surveys of extragalactic transients such as supernovae, optical counterparts to gravitational-wave (GW) and fast radio bursts. We adopt an ensemble-based machine learning technique and further filtering scheme that provides high completeness $\sim 98\%$ and purity $\sim 91\%$ across a wide magnitude range. Here we present an important use-case of our robotic transient search, which is the follow-up of GW event triggers from LIGO/Virgo. We discuss the facility's performance in the case of the second binary neutron star merger GW190425. In time for the LIGO/Virgo O4 run, we will have deeper reference images for galaxies within out to ~ 200 Mpc distance, allowing rapid transient detection to $i \sim 21$ mag.

[포 HA-04] All about the Gemini Proposal Routes: FT, DDT, and PW

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We, on behalf of the Korean Gemini Office (KGO), introduce three proposal routes besides a standard semester program available for the Korean Gemini users: Fast Turnaround (FT), Director's Discretionary Time (DDT), and Poor Weather (PW). By presenting useful statistics and some examples implemented through these routes, we aim to provide the KAS members insights how well these observing routes have been utilized by the Gemini partners. Finally, we provide several useful suggestions to the KAS community for preparing these programs.