

*Korea Astronomy and Space Science Institute*

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  $\sim 200$  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.