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KASI is planning a large telescope project to acquire 10% share of the GMT (Giant Magellan Telescope) extremely large telescope as one of national R&D project. By participating in GMT, we expect to provide the best environment for observational astronomers in Korea and give opportunity to upgrade the current research and instrumentation level to world-leading class. In this contribution, we will report the concept of the GMT project and Korean participation plan as well as the current status of fundraising activity.

**[VIII-2-2] Development of 80cm Telescope for Muju County Public Astronomical Observatory**  
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Space Science and Technology Laboratory at Kyung Hee University developed an 80cm Nasmyth telescope with the joint work of Space & Astronomy, Inc. It was set up at Muju county public astronomical observatory in Jeonlabuk-Do. Nasmyth focus system was selected for the telescope to use two focal points by a rotatable tertiary mirror. Focal ratios of the telescope are f10, f5 respectively. Support of the main mirror is made with Lasalle-system. This system uses 24-points in the back side of the mirror that are all resting on small counter-weights and side support is 10-points Boll link Flexible type with 2 Lasalle type. The mount is wheel & disk type Alt-Azimuth design using DC-servo motors. External high accuracy encoder has 47,600 sine-waves/rot. These encoders are used to make real-time corrections on all gearing errors.

**[VIII-2-3] Development of the software for high speed data transfer of the high-speed, large capacity data archive system for the storage of the correlation data from Korea-Japan Joint VLBI Correlator (KJJVC)**

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Korea-Japan Joint VLBI Correlator (KJJVC), to be used for Korean VLBI Network (KVN) in Korea Astronomy & Space Science Institute (KASI), is a high-speed calculator that

outputs the correlation results in the maximum speed of 1.4GB/sec. To receive and record this data keeping up with this speed and with no loss, the design of the software running on the data archive system for receiving and recording the output data from the correlator is very important. But, the simple kind of programming using just single thread that receives data from network and records it by turns, can cause a bottleneck effect while processing high speed data and a probable data loss, and cannot utilize the merit of hardwares supporting multi core or hyper threading, or operating systems supporting these hardwares. In this talk we summarize the design of the data transfer software for KJJVC and high speed, large capacity data archive system using general socket programming and multi threading techniques, and the pre-BMT (Bench Marking Test) results from the tests of the storage product providers' proposals using this software.

**[VIII-2-4] Current Progress in Fabrication of Ta and Nb based STJs for an Astronomical Detector**

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STJ (Superconducting Tunnel Junction) technique offers next generation photon detectors exhibiting high energy resolution, high quantum efficiency and photon counting ability over the broad wavelength range from X-ray to NIR. We report the success in fabrication of Ta/Al-AlOx-Al/Ta and Nb/Al-AlOx-Al/Nb micro structure deposited on sapphire substrates using various techniques including UV photolithography, DC Sputtering, RIE, and PECVD technique. The characterization experiment was undertaken in an Adiabatic Demagnetization Refrigerator at an operating temperature below 50mK. The details of experimental investigations for electrical characterization of STJ of 20~80μm in side-lengths are discussed. The measured I-V curves were used to derive the detector performance indicators such as energy gap, energy resolution, normal resistance, normal resistivity, dynamic resistance, dynamic resistivity, and quality factor.

**[VIII-2-5] Network Lunar Science for International Lunar Network (ILN)**

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Recently, statement of Intent for ILN has been signed by 9 countries including Korea, initiated March of this year by NASA which invited countries having lunar exploration plans. Concept of ILN is placing several core set of instrumentation on the Moon, in order to maximize scientific return to all of the participants. Network measurements from various nodes on lunar surface is essential for understanding internal structure of the Moon and environment around the Moon. Currently, Core Instrument Working Group is discussing the scientific interests and instrumentation among participated countries. Korea also is looking over various ways to participate ILN. We will introduce the progress and possible lunar science of ILN and will discuss the science mission objectives.

**[VIII-2-6] A Feature of Tidal Tails around Selective Globular Clusters in the Galactic Halo and Bulge**

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Tides caused by the Galactic gravitational field affect the current dynamical structure of globular clusters in the Galaxy. Indeed, the observed feature of tidal tails stretching beyond globular clusters' tidal radii provides a key information of interaction with the gravitational field of the Galaxy and kinematical orbit of the clusters, which can be an evidence of the merging scenario of the Galaxy formation and evolution. To find such a tidal feature, we have studied spatial density distribution of stars around five globular clusters in the Galactic halo and one cluster in the Galactic bulge, for which we have used wide-field deep photometric data of gri and JHK bands obtained from the MegaCam and WIRCam of the CFHT. Applying the statistical contrast filtering of field stars in the color-magnitude plane of detected stars around five halo clusters, we have found features of tidal tails for four clusters M53, M15, NGC 5053, and NGC 5466. The detected over-density tidal features are well aligned with the cluster's orbits and stretched into the direction of the Galactic center. Statistical analysis indicate that these tidal tails are believed to be cluster stars that have escaped due to the tidal effects to the clusters. A similar tidal feature to that of halo clusters is also detected for the bulge cluster NGC 6626, while the over-density feature seems to be extended into the Galactic plane rather than into the orbital direction and the Galactic center. Conclusively, our result adds further observational evidence

of the merging scenario of the Galaxy formation and evolution.

**[VIII-2-7] Observation Error During the Period of the Joseon Dynasty**

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In Korean historical documents, there are a great number of the records for various astronomical events. In particular, historical documents of the Joseon dynasty also have the records containing observational data by an astronomical instrument. However, a quantitative analysis for the accuracy of observational values have never been studied, although there are some studies on the truth of the records themselves. Hence, we investigated observation errors during the period of the Joseon dynasty from the records of Joseon-Wang-Jo-Sil-Lok (the Annals of the Joseon Dynasty) and Seung-Jeong-Won-Il-Gi (Daily Records of the Royal Secretariat). We used the records of the Mars, supernova 1604, and Halley's Comet, and found that observational values before the Hideyoshi invasions in 1592 are relatively more accurate than those after then. However, because the number of cases used in this study is small, we think that more studies are needed to confirm our results. Nonetheless, we reckon our work will be of service to understand astronomical records of the Joseon dynasty.

**[VIII-2-8] (O-C) Variations of Eclipsing Binaries in Multiple Stellar Systems**

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In There are inventoried 308 eclipsing systems among 1,158 multiple systems listed in Tokovinin (1997, 2007)'s multiple system catalog. Their characteristics of (O-C) variations for 83 systems among the 308 systems, which have timings of minimum lights enough to see the trends of their period changes, were investigated with the Kreiner, Kim and Nha (2001)'s recent database of times of minimum lights of eclipsing binaries. It is found that the (O-C) variations for 39 systems, corresponding to 47% of the investigated 83 systems, does not show any anticipated light-time effects (hereafter LITE) at all. Among the rest 44 systems 7 systems with apsidal motion also have a single LITE. Only 6 systems have a single LITE or double LITEs. The rest 31 systems show a secular variation superposed on a single or double or more LITEs or very complicated variation patterns. Some possible explanations for their diverse differentiation of variation are discussed.