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The GMT-Consortium Large Earth Finder (G-CLEF) is the very first light instrument of the Giant Magellan Telescope (GMT) to be commissioned in 2022. The instrument is a fiber feed, optical band echelle spectrograph that is capable of extremely precise radial velocity measurement. Korea Astronomy and Space Science Institute (KASI) has been involved in the development of the G-CLEF as one member of the international consortium consisted of five astronomical institutes including Smithsonian Astrophysical Observatory (SAO), Observatories of the Carnegie Institution of Washington (OCIW). It is scheduled to have KASI side Critical Design Review in December 2017. In this presentation we will report the recent progress on the critical design activities for the G-CLEF Flexure Control Camera (FCC).

[구 AT-03] Development of KHU Automatic Observing Software for McDonald 30inch telescope (KAOS30)

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Automatic observing is the most efficient system for sky surveys that image many targets over large areas of the sky. Such a system requires the integrating control software that systematically manages astronomical instruments that are not connected to each other. In February of 2017, we installed a wide-field 10 inch telescope for Supernovae survey on the McDonald 30 inch telescope as a piggyback system. However, during the observations, information such as target coordinates could not be exchanged with the telescope mount. The reason is the program that controls the telescope control system (TCS) and the program that controls the imager operate on independent PCs. KAOS30 is an integrated observing software developed to improve this environment. The software is composed of four packages that are the Telescope Control Package (TCP), the Data Acquisition Package (DAP), the Auto Focus Package (AFP), and the Script Mode Package (SMP). The TCP communicates to the TCS and also communicates weather information. SMP supports automatic observing in a script mode, which improves the efficiency of the survey. KAOS30 was developed based on Visual C ++ and runs on the Windows operating system. It also supports the ASCOM driver platform for various manufacturers. The instruments that support ASCOM can be installed without modification of the program code. KAOS30 can be applied as software for many different telescopes in future projects.

[구 AT-04] Plan of the Extended KVN (KVN 확장 계획)

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KVN is a millimeter VLBI array composed of three 21m-diameter radio telescopes at Seoul, Ulsan and Jeju island in Korea. KVN has unique simultaneous multi-frequency receiving systems, which enable us to correct phase fluctuation of troposphere by transferring phase solution of low frequency data to higher frequency data. Although KVN can achieve very high performance up to 130 GHz through multi-frequency technique, imaging capability is highly limited because of lack of the number of baselines. In order to enhance imaging capability and maximizing multi-frequency capability, we plan to extend KVN baselines from 3 to 10 (or more) by constructing new KVN stations. This talk introduce expected performances, science cases, required budgets and periods of the Extended-KVN.

[구 AT-05] ASTE receiver optics design using ultra wideband corrugated horn at combined ALMA band 7 and band 8 frequencies

Bangwon Lee[1], Jung-won Lee[1] & Alvaro Gonzalez[2]