TRAO Radio Telescope(대덕전파천문대 레이돔 교체)

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전파망원경 레이돔은 14미터 우주전파망원경을 외부 환경(눈, 비, 바람, 햇빛)으로 부터 보호하여 효율적인 우주전파 관측연구를 수행하는데 필수적인 연구시설이다. 현재 사용 중인 대덕전파천문대 레이돔은 1985년에 설치되어 30년째 사용 중이다. 노후화로 인해 누수가 있으며, 겨울철에는 내부에 빙결이 발생하며, 유지보수가 어려운 상황이다.

본 발표에서는 2016년 12월말부터 2017년 2월 초까지 이루어진 레이돔의 교체과정과 기존 레이돔과 교체된 레이돔의 성능 등을 발표한다.

[구 AT-02] Critical Design Status of the G-CLEF Flexure Control Camera

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The GMT-Consortium Large Earth Finder (G-CLEF) is the very first light instrument of the Giant Magellan Telescope (GMT). The instrument is a fiber feed, optical band echelle spectrograph that is capable of extremely precise radial velocity measurement, and has been being developed through the international consortium consisted of five astronomical institutes including Smithsonian Astrophysical Observatory (SAO), Observatories of the Carnegie Institution of Washington (OCIW), and Korea Astronomy and Space Science Institute (KASI). The Preliminary Design Review (PDR) for the G-CLEF was held in Cambridge, Massachusetts in April 2015. It is scheduled to have Critical Design Review (CDR) in March 2018. Flexure Control Camera (FCC) is one of the KASI's major contributions to the G-CLEF project. In this presentation, we describe the current critical design status, and structural and thermo-elastic analyses results on the G-CLEF FCC.

[구 AT-03] Wide-Field Imaging Telescope-0(WIT0): A New Wide-Field 0.25 m Telescope at McDonald Observatory

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A small wide-field imaging telescope is a powerful instrument to survey the Universe: wide-field image can monitor the variability of many sources at a time, e.g. young stellar objects and active galactic nuclei, and it can be an effective way to locate transient sources without precise positional information such as gravitational wave sources or some gamma-ray bursts. In February 2017, we installed a 0.25 m f/3.6 telescope on the McDonald 0.8 m telescope as a piggyback system. With a 4k X 4k CCD camera, the telescope has a 2.35 X 2.35 deg field-of-view. Currently, it is equipped with Johnson UBVRI filters and 3 narrow-band filters: Hα, OIII and SII. We will present the installation process, and the telescope performance such as detection limit and image quality based on the data from commissioning observations. We will also discuss possible scientific projects with this system.

[구 AT-04] Control Software of SQEUAN (SED camera for the QUasars in EArly uNiverse)

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Spectral energy distribution camera for QUasars in EArly uNiverse (SQUEAN) is a successor of Camera for Quasars in EArly uNiverse (CQUEAN) which was developed by Center for the Exploration of the Origin of the Universe and operated at the 2.1 m Otto Struve Telescope in the McDonald Observatory, USA, since 2010. The software of SQUEAN controls a science camera, a guiding camera, and a filter wheel, and communicates with the telescope control system (TCS). It has been

constantly revised and modularized according to the upgrades of the TCS and the hardware changes. Recently we have implemented the stable network communication and the semi-automatic focusing modules to enhance observational convenience. In this presentation we describe the current status of the SQUEAN control software and introduce a software architecture which is optimized on efficient astronomical observations.

[구 AT-05] Seoul National University Camera II (SNUCAM-II) : The New SED Camera for Lee Sang Gak Telescope (LSGT)

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We present the characteristics and the performance of the new CCD camera system, SNUCAM-II (Seoul National University CAMera system II) that was installed on the Lee Sang Gak Telescope (LSGT) at the Siding Spring Observatory Australia in 2016. SNUCAM-II consists of a deep depletion chip covering a wide wavelength from 0.3 μm to 1.1 μm with high sensitivity (QE at 90%). It is equipped with SDSS ugriz filters and 13 medium band width (50nm) filters. On LSGT, SNUCAM-II covers 15.7 x 15.7 arcmin FOV at pixel scale of 0.92 arcsec and a limiting magnitude of g = 19.91 AB mag at 5σ with 180s exposure time. SNUCAM-II will enable us to study Spectral Energy Distributions (SEDs) of diverse objects from extragalactic sources to solar objects in the southern hemisphere for research and education activities.

[구 AT-06] Results of Observation Performance Test for NYSC 1m Telescope

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국립고흥청소년우주체험센터는 덕흥천문대 1M망원경으로 관측한 자료를 축적하고 있다. 1M망원경이 설치 된 후 발생했던 문제점인 광축, 극축, 지향정밀도, 추적정밀도를 개선하기 위해 시도했던 방법의 결과를 개선 전후 관측 자료를 비교하여 소개하고자 한다. 현재는 오토가이드 없이 별 추적이 3600초 정도 가능하다. 또한, 스크립트 활용으로 소프트웨어를 개선하여 관측의 용이성을 증대시켰다. 은하측광, 분광, 시계열관측 등 차별화된 연구를 수행하기 위한 기기 및 소프트웨어의 확충·보완을 수행하고 있다.

중성미자 천문학과 한국형 중성미자망원경

[초 NK-01] Korean Neutrino Telescope and Neutrino Science

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Neutrinos play an important role in astronomy and therefore they need to be observed as well as other astronomical messengers. The first observation of astronomical neutrinos is from the SN1987a by the Kamiokande neutrino telescope in Japan. Unlike other astronomical messengers neutrinos can cover all energy range of astronomical phenomena due to their weak interactions and neutrality.

Multi messenger astronomy including optical, neutrino, and cosmic ray observations, provides more information on astronomical phenomena and thus such collaborational works are ongoing worldwide. A future Korean neutrino telescope consisting of huge (260 kiloton) water Cherenkov detector under a mountain was proposed in 2016 and the sensitivity studies on various topics are in progress with international collaborators.

In this talk I will introduce the future Korean neutrino telescope and its science as well as the potential candidate sites in Korea. We invite all of you to work together for the future Korean neutrino telescope that will operate more than 30 years.

[초 NK-02] Astronomy Potentials with Korean Neutrino Detector and Telescope

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A 250 kton water Cherenkov detector is proposed to be built in Korea to determine the CP violation phase and the neutrino mass ordering using a neutrino beam produced in J-PARC of Japan. It will be also a world-leading neutrino telescope to reveal the mystery of supernova explosion by observing a neutrino burst. The telescope is expected to detect more than 100,000