

**[초 HA-03] K-GMT Science Program with Gemini Observatory: Step Stone to GMT Science**

Narae Hwang<sup>1</sup>, Jae-Joon Lee<sup>1</sup>, Ho-Gyu Lee<sup>1</sup>, Minjin Kim<sup>1,2</sup>, Byeong-Gon Park<sup>1,2</sup>, Joon Hyeop Lee<sup>1,2</sup>  
<sup>1</sup>*Korea Astronomy and Space Science Institute*  
<sup>2</sup>*Korea University of Science and Technology*

Korea Astronomy and Space Science Institute (KASI) joined the Gemini Observatory as a 'Limited-Term Partner' in 2014, and is providing the Gemini facility for Korean community through K-GMT Science Program starting from 2015. The access to Gemini facility is expected to open a new window of opportunities in the field of optical and infrared observational researches and to help efficient development of science cases for GMT. We will present the short and long-term expectations and possible outcomes of the KASI-Gemini partnership.

**[구 HA-04] Building on successful existing collaborations with the University of Arizona**

Jinyoung Serena Kim  
*Steward Observatory/University of Arizona*

Scientific collaborations and observational programs have been on-going between astronomers in Korea and the Steward Observatory/University of Arizona. I will present such existing collaboration models/examples between research groups or individuals and astronomers in KASI or in other institutions and universities in Korea. Building on existing collaborations we would like to further develop opportunities for future scientific collaborations and encourage scholarly exchanges between students, researchers, and faculty members in Korea and Steward Observatory/University of Arizona. In this talk I will also discuss current status of observational programs of Korean astronomers using U of A facilities (MMT and Magellan), as well as successful collaboration examples between Steward Observatory and astronomical institutions in other countries.

**[구 HA-05] Recent Developments at the Large Binocular Telescope Observatory, GMT's forerunner**

Christian Veillet  
*Large Binocular Telescope Observatory*

After a short description of the telescope, we will

report on the recent developments in three main areas:

- Commissioning of the last of LBT's first generation instruments, now well underway,
- Adaptive Optics (AO) and ground-layer AO progress and planned upgrades,
- Interferometry first science results.

We will also explore the future of the facility as it moves to full operation and strive to be the first of the ELTs in the decade-long window in which GMT, TMT, and E-ELT break ground and start taking shape.

**항성 / 항성계 / 외계행성**

**[구 ST-01] Distance and Reddening of NGC 6791 using Empirically Calibrated Isochrones**

Deokkeun An<sup>1</sup>, Donald M. Terndrup<sup>2</sup>, Marc H. Pinsonneault<sup>2</sup>, Jaewoo Lee<sup>2</sup>  
<sup>1</sup>*Ewha Womans University*, <sup>2</sup>*Ohio State University*,  
<sup>2</sup>*Sejong University*

Although the theory of stellar structure and evolution is considered one of the most successful developments in astrophysics, there still remains a significant mismatch between theoretical stellar models and the observed main sequence of the best studied nearby open clusters. To ease the tension, empirical corrections to the color-temperature transformations are used as a simple, but practical way of overcoming the difficulty than directly examining stellar atmosphere models that have large theoretical complexities and uncertainties. I will describe our continuing effort to calibrate stellar isochrones using cool main-sequence stars in Praesepe, complementing our previous work based on the Hyades and the Pleiades, and provide an extensive test of our models using photometry of cool and metal-rich main-sequence stars in NGC 6791. Finally, I will discuss the implication of our results on the mass loss in NGC 6791.

**[석 ST-02] Spectroscopic Survey of G and K Type Dwarfs in the Hipparcos Catalog**

Bokyoung Kim<sup>1</sup>, Deokkeun An<sup>1</sup>, Young Sun Lee<sup>2</sup>, John R. Stauffer<sup>3</sup>, Donald M. Terndrup<sup>4</sup>, Jennifer Johnson<sup>4</sup>  
<sup>1</sup>*Department of Science Education, Ewha Womans University*  
<sup>2</sup>*Department of Astronomy and Space Science, Chungnam National University*

<sup>3</sup>*NExScI, Caltech*<sup>4</sup>*Department of Astronomy, Ohio State University*<sup>4</sup>*Department of Astronomy, University of Texas at Austin, TX, USA*

We present a preliminary result from a high-resolution and high signal-to-noise spectroscopic survey, providing atmospheric parameters for about 170 nearby field dwarfs in the Hipparcos catalog. Our preliminary analysis shows that when Hipparcos parallaxes are adopted, a few stars in our sample are too faint compared to main-sequence fitting distances based on our accurately measured [Fe/H]. We discuss magnitude deficits of these field stars in connection with the short Hipparcos distance to the Pleiades.

### [ㄱ ST-03] The circumstellar disk and wide-orbit companion candidates around T-Tauri Star

Daehyun Oh<sup>1,3</sup>, Motohide Tamura<sup>2,3</sup>, Aoki Wako<sup>1,3</sup><sup>1</sup>*SOKENDAI [The Graduate University of Advanced Studies]*<sup>2</sup>*The University of Tokyo*<sup>3</sup>*National Astronomical Observatory of Japan*

We present the near-infrared(NIR) images of the asymmetric circumstellar disk around a T-Tauri star in the  $\rho$  Ophiuchi star-forming region, and two faint stellar objects around central star. These results were obtained with the Subaru Telescope with HiCIAO(the High-Contrast Instrument with Adaptive Optics) and IRCS(the InfraRed Camera and Spectrograph). The disk shows center-offset from the star and a strong morphological asymmetry along both the major and minor axis. The physical conditions in the disk is derived from the infrared visibility results and the complete spectral energy distribution using HOCHUNK3D, Monte-Carlo radiative transfer code. Two companion candidates are separated by 11.6 arcsec( $\sim 1450$  au at 125 parsec) and 4.34 arcsec( $\sim 540$  au at 125 parsec). This could be the first case, which imaged both of planetary mass companions and disk around same star. We discuss physical structures of the disk, and probability that two candidates are real companions.

### [ㄱ ST-04] IGRINS Spectral Library

Sunkyoung Park<sup>1</sup>, Jeong-Eun Lee<sup>1</sup>, Wonseok Kang<sup>2</sup>, Sang-Gak Lee<sup>2</sup>, Moo-Young Chun<sup>3</sup>, Kang-Min Kim<sup>3</sup>, Ueejeong Jeong<sup>3</sup>, In-Soo Yuk<sup>3</sup>, and Daniel T. Jaffe<sup>4</sup><sup>1</sup>*School of Space Research, Kyung Hee University*<sup>2</sup>*National Youth Space Center*<sup>3</sup>*Korea Astronomy and Space Science Institute*

We present the high-resolution near-infrared spectra of standard stars observed with Immersion Grating Infrared Spectrograph (IGRINS). IGRINS covers the full spectral range of H and K bands simultaneously with a high spectral resolution ( $R=40,000$ ), revealing many previously undetected and/or unknown lines. In this work, we present preliminary results of spectroscopic diagnostics for stellar physical parameters. Our ultimate goal is to provide a library of near-infrared spectra of standard stars, which covers all spectral types and luminosity classes, with a high-resolution and high signal to noise ratio ( $SNR \geq 200$ ).

### [ㄱ ST-05] The CTIO 4m UBVI & Ha photometry and spatial variation of the reddening law in the $\eta$ Carina nebula

Hyeonoh Hur<sup>1</sup>, Hwan kyung Sung<sup>1</sup>, Beomdu Lim<sup>2</sup>, Moo-Young Chun<sup>2</sup>, Sangmo Tony Sohn<sup>3</sup><sup>1</sup>*Department of Astronomy and Space Science, Sejong University*<sup>2</sup>*Korea Astronomy and Space Science Institute*<sup>3</sup>*Space Telescope Science Institute*

Deep UBVI and Ha photometry of the  $\eta$  Carina nebula, one of the brightest nebulae on the sky, was obtained with the CTIO 4m telescope and MOSAIC II CCD Camera to determine the initial mass function down to low-mass ( $\sim 1 M_{\odot}$ ) stars. We modified the spatial variation coefficients in transformation relations of the MOSAIC II CCD. From the cross-identification of optical sources with previous surveys in X-ray, near-infrared, and mid-infrared, a clear PMS sequence is revealed in the optical color-magnitude diagrams down to  $V=23$  mag. Our previous SSO 1m UBVI data for Trumpler 14 (Tr 14) and Trumpler 16 (Tr 16) region, and additional SSO 1m UBVI data for Trumpler 15 (Tr 15) region were combined with the CTIO 4m data to re-examine the reddening law and distance of the young open clusters in the  $\eta$  Carina nebula. From the new photometric data for Tr 15 region, we report that  $RV[=AV/E(B-V)]$ , the total-to-selective extinction ratio, decreases from southern part of the nebula (Tr 14 and Tr 16) to northern part (Tr 15) in our field of view.