Session:	**[B5B-6] S6 : Observing Facilities and International Collaborations**
Date:	August 22, 2014 (Friday)
Time:	11:00~12:30
Room:	Room F (Room 108)
Chair:	Ranjan Gupta (IUCAA)

[B5B-6-1] **11:00~11:20**

[Invited] Optical-infrared and High-energy Astronomy Collaboration at Hiroshima Astrophysical Science Center

Makoto Uemura (Hiroshima University, Japan), Michitoshi Yoshida, K. S. Kawabata, T. Mizuno, Y. T. Tanaka, H. Akitaya, Y. Utsumi, Y. Moritani, R. Itoh, Y. Fukazawa, H. Takahashi, M. Ohno, T. Ui, K. Takaki, N. Ebisuda, K. Kawaguchi, K. Mori, Y. Ohashi, Y. Kanda, M. Kawabata, K. Takata, and T. Nakaoka

Hiroshima Astrophysical Science Center (HASC) was founded in 2004 in Hiroshima University, Japan. The main mission of this institute is observational study of various transient objects including gamma-ray bursts, supernovae, novae, cataclysmic variables, and active galactic nuclei by means of multi-wavelength observations. HASC consists of three divisions; optical-infrared astronomy division, high-energy astronomy division, and theoretical astronomy division. HASC is operating a 1.5m optical-infrared telescope Kanata, which is dedicated to follow-up and monitoring observations of transient objects. The high-energy division is the key operation center of Fermi gamma-ray space telescope. HASC and the high-energy astronomy group in department of physical science of Hiroshima University are closely collaborating with each other to promote multi-wavelength time-domain astronomy. We report the recent activities of HASC and some science topics made by this multi-wavelength collaboration.

[B5B-6-2] **11:20~11:35**

MIRIS, A Compact Wide-field Infrared Space Telescope

Wonyong Han (Korea Astromony and Space Science Institute, Korea), Dae-Hee Lee, Woong-Seob Jeong, Youngsik Park, Bongkon Moon, Sung-Joon Park, Jeonghyun Pyo, Il-Joong Kim, Won-Kee Park, Duk-Hang Lee, Kwang-Il Seon, Uk-Won Nam, Sang-Mok Cha, Jang-Hyun Park,

A compact infrared space telescope called MIRIS (Multi-purpose Infra-Red Imaging System) was developed by the Korea Astronomy and Space Science Institute (KASI), and launched in November 2013. The main mission of MIRIS is a Paschen-α emission line survey along the Galactic plane and cosmic infrared background (CIB) observation, particularly around the north ecliptic pole region. For these missions, a wide field of view 3.67 X 3.67 degree with an angular resolution of 51.6 arcsec and wavelength coverage from 0.9~2.0 micro-meter have been adopted for MIRIS, having optical components consisting of a 80mm main lens and four other lenses with F/2 focal ratio optics. The opto-mechanical system was carefully designed to minimize any effects from shock during the launch process and thermal variation. Also, the telescope was designed to use the passive cooling technique to maintain the temperature around 200K in order to reduce the thermal noise. A micro Stirling cooler was used to cool down the Teledyne PICNIC infrared array to 90K, which was equipped in a dewar with four filters for infrared passbands of I, H, and Paschen-α and a dual-band continuum line filter. MIRIS system was integrated into the Science and Technology Satellite-3 of Korea (STSAT-3) as its primary payload and successfully passed required tests in the laboratory, such as thermal-vacuum, vibration, and shock tests. MIRIS is now operating in sun synchronous orbits for initial tests and has observed its first images successfully.

[B5B-6-3]	11:35~11:50

An East-Asian Planet Search Network (EAPS-NET)

Hideyuki Izumiura (National Astronomical Observatory of Japan, Japan)

When the era of 8-10m class large telescopes began, 1-2m class telescopes became much less crowded, thus, they became more flexibly available for various intensive monitoring observations. The situation allowed time-domain astronomy to develop rapidly world-wide in the last decade. In particular, the discovery of the first planet in a sun-like star, 51 Peg in 1995 boosted monitoring programs for exoplanet researches via precise radial velocity measurements and high cadence precision photometry. Under such circumstances, we tried to establish an extra-solar planet search network using three 2m-class telescopes in East Asia (East Asian Planet Search Network, EAPS-NET) in 2005. The three telescopes are the 1.8m reflector at Bohyunsan Optical Astronomy Observatory in Korea, the 1.88m reflector at Okayama Astrophysical Observatory in Japan, and the 2.16m reflector at Xinglong Station in China. They are each equipped with a high resolution spectrometer to which an iodine cell was installed for precision radial velocity measurements. And we were able to begin two two-country collaborations, Korea-Japan and China-Japan, in parallel in order to carry out extra-solar planet searches in G-type giant stars by precise radial velocity measurements (Doppler technique). The collaborations are now gradually evolving toward a true three-country collaboration.
In this presentation, on behalf of EAPS-NET, I will introduce EAPS-NET, then review the activities so far made concerning extra-solar planet searches with Doppler technique and related instrumentation. I will also summarize the scientific achievements including several detections of planets and brown dwarfs in G-type giants based on EAPS-NET collaboration. I will finally discuss a possible future direction of EAPS-NET in the coming age of GAIA.

[B5B-6-4]	11:50~12:05

International Collaboration for Silicon Carbide Mirror Polishing and Development

Jeong-Yeol Han (Korea Astronomy and Space Science Institute, Korea), Myung Cho, Gary Poczulp, Jakyung Nah, Hyun-Joo Seo, Kyeong-Hwan Kim, Kyung-Mo Tahk, Dong-Kyun Kim, Jinho Kim, Minho Seo, Jonggun Lee, and Sung-Yeop Han

In order to polish a Silicon Carbide (SiC) mirror material with fine surface figure of less than 20 nm rms and smooth roughness of less than 2 nm Ra, Korea Astronomy and Space Science Institute (KASI) and National Optical Astronomy Observatory (NOAO) agreed to cooperate on polishing and measuring facilities, experience and human resources for two years (2014-2015). In addition, Green Optics Co., Ltd (GO) has been interested in the SiC polishing and joined the partnership. KASI has a total responsibility of development of the SiC polishing and measurement and rent three different kinds of SiC materials (POCOTM, CoorstekTM and SSGTM corporations) from NOAO. GO will polish the SiC substrate within requirements. Optical surface requirements except surface figure and roughness are surface imperfection of less than 40 um scratch and 500 um dig. In this paper, we introduce the international collaboration for SiC mirror polishing and development. For research and development of Silicon Carbide (SiC) mirrors, Korea Astronomy and Space Science Institute (KASI) and National Optical Astronomy Observatory (NOAO) has agreed to cooperate on polishing and measuring facilities, experience and human resources for two years (2014-2015). Main goals of the SiC mirror polishing are to achieve the optical surface figure of less than 20 nm rms and the optical surface roughness of less than 2 nm Ra. In addition, Green Optics Co., Ltd (GO) has been interested in the SiC polishing and joined the partnership. KASI will be involve in the development of the SiC polishing and measurement using three different kinds of SiC materials (POCOTM, CoorstekTM and SSGTM corporations) provided by NOAO. GO will polish the SiC substrate within requirements. Additionally, requirements of the optical surface imperfections are given as: less than 40 um scratch and 500 um dig. In this paper, we introduce the international collaboration for SiC mirror polishing and development.

Poster Session	12:05~12:30

Chairs: **Ranjan Gupta** (IUCAA)

Wonyong Han (Korea Astromony and Space Science Institute)