Session:	**[B2B-6] S6 : Observing Facilities and International Collaborations**
Date:	August 19, 2014 (Tuesday)
Time:	14:00~15:30
Room:	Room F (Room 108)
Chair:	Masanori Iye (National Astronomical Observatory of Japan)

[B2B-6-1] **14:00~14:20**

[Invited] The Next-Generation Infrared Astronomy Mission SPICA under the New Framework

Takao Nakagawa (Institute of Space and Astronautical Science/JAXA, Japan), Hiroshi Shibai, Takashi Onaka, Hideo Matsuhara, Hidehiro Kaneda, Yasuhiro Kawakatsu, and SPICA Team

We present the current status of SPICA (Space Infrared Telescope for Cosmology and Astrophysics), which is a mission optimized for mid- and far-infrared astronomy with a cryogenically cooled 3m-class telescope. SPICA is expected to achieve high spatial resolution and unprecedented sensitivity in the mid- and far-infrared, which will enable us to address a number of key problems in present-day astronomy, ranging from the star-formation history of the universe to the formation of planets. We have carried out the “Risk Mitigation Phase” activity, in which key technologies essential to the realization of the mission have been extensively developed. Consequently, technical risks for the success of the mission have been significantly mitigated. Along with these technical activities, the international collaboration framework of SPICA had been revisited, which resulted in larger contribution of ESA than that in the original plan. To enable the ESA participation under the new framework, a SPICA proposal to ESA is under consideration as a medium-class mission under the framework of the ESA Cosmic Vision. The target launch year of SPICA under the new framework is mid 2020s

[B2B-6-2] **14:20~14:40**

[Invited] ASTRO-H International X-ray Observatory

Motohide Kokubun (Institute of Space and Astronautical Science/JAXA, Japan), Tadayuki Takahashi, and the ASTRO-H Collaboration

The ASTRO-H mission is an international X-ray observatory which is scheduled to be launched in 2015 by the H-IIA rocket of JAXA. The spacecraft carries four kinds of six instruments equipped with four X-ray telescopes, which enable us to investigate the physics of hot and non-thermal universe with an unprecedented high energy resolution, simultaneously covering a wide energy range of 0.3 to 600 keV. These instruments include a high-resolution, high-throughput spectrometer sensitive over 0.3–12 keV with an energy resolution better than 7 eV, two sets of hard X-ray telescopes and imaging spectrometers covering 5–80 keV, a wide-field X-ray CCD camera sensitive over 0.4–12 keV, and two Compton-camera type soft gamma-ray detectors, sensitive in the 40–600 keV band. The scientific goal of the mission covers a wide variety of important science themes, from fundamental physics observed in extreme conditions around the compact objects like neutron stars and black holes, to the history of formation and evolution of the largest structures in our universe. This talk will represent an overview of the mission, basic technologies developed and used, the current status of the production, in addition to prospects of the astrophysical impacts which are expected to be achieved by the capabilities of ASTRO-H.

[B2B-6-3] **14:40~15:00**

[Invited] Quantifying Dark Molecular Gas (DMG)

Di Li (National Astronomical Observatories, China), Carl Heiles, Duo Xu, and Zhichen Pan

Interstellar gas is the building block of stars and galaxies. A significant quantity of interstellar gas cannot be traced by either CO or HI emission and has been dubbed "dark das". Understanding the nature of dark gas is a critical step in understanding the full lifecycle of the Milky Way and evolution of galaxies. The collaboration of FAST and other giant telescopes and interferometers in the world, such as Arecibo, ATCA, ALMA, and JVLA, will provide us a platform to study dark gas in high sensitivity and resolution. We plan to study the abundance and distribution of dark gas, in order to comprehensively understand Milky Way interstellar medium and the formation of stars.

[B2B-6-4] **15:00~15:15**

[Invited] CFHT Status Report and Future Plans

Doug Simons (Canada-France-Hawaii Telescope, USA)

After a brief summary of recent metrics illustrating the scientific success of CFHT, the future of the Observatory is described through various initiatives designed to broaden the CFHT partnership, develop new capabilities, and take steps toward the replacement of CFHT with a powerful new facility (ngCFHT) dedicated to highly multiplexed wide-field spectroscopy. CFHT, in the context of the evolving landscape on Mauna Kea will also be discussed, as CFHT positions itself among a backdrop of some older facilities possibly being decommissioned while new Mauna Kea facilities are on the planning horizon.

[B2B-6-5] **15:15~15:30**

The Australia Telescope National Facility

Philip Edwards (CSIRO Astronomy & Space Science, Australia) and Naomi McClure-Griffiths

The Australia Telescope National Facility (ATNF) is an open access radio astronomy observatory operated by Australia’s Commonwealth Scientific and Industrial Research Organisation (CSIRO). The ATNF consists of the Parkes 64m radiotelescope, the Australia Telescope Compact Array, and the Mopra 22m radiotelescope. The Australian Square Kilometer Array Pathfinder (ASKAP), a new wide-field array of thirty-six 12m antennas, is currently being commissioned and will commence early science in 2015. In addition, under the host country agreement with NASA, some access is provided to the Tidbinbilla 70m and 34m antennas. Approximately 5% of the time on these facilities is used for high angular resolution Very Long Baseline Interferometry (VLBI) observations. Observing time on ATNF telescopes is open to astronomers from any country, on the scientific merits of the proposed research. The ATNF has a large international user community, with good representation from the Asia-Pacific region. In this presentation, each element of the National Facility will be introduced and recent developments highlighted.
The Parkes radio-telescope has a suite of receivers operating at frequencies between 700 MHz and 22 GHz. It has state-of-the-art digital filterbanks and correlators for pulsar, spectral line and continuum observations. Over the last 4 years Parkes has undergone a number of upgrades and improvements, which have enabled completely remote operations. The Australia Telescope Compact Array is an array of six 22m antennas that operate between 1.1 and 105 GHz. The Compact Array Broadband Backend (CABB) upgrade in 2008 has enabled two 2-GHz bandwidth, dual polarization, channels to be recorded with spectral resolutions ranging from 64 MHz to 0.5 kHz. The array is reconfigured every few weeks, cycling through the 17 standard array configurations with maximum baselines between 90m and 6km.
The Mopra radio-telescope is used primarily in the 16—27 GHz, 30—50 GHz and 76—117 GHz bands. The MOPS spectrometer provides a wideband mode, with four 2.2GHz bands each with 8192 channels in both polarisations, and 16 narrowband “zooms” giving 33 kHz wide channels. Mopra is currently operating under an externally funded model with the majority of the time allocated to the funding consortia, and with ~5 weeks available each winter for open access under the standard proposal process. The Long Baseline Array combines the Parkes, ATCA and Mopra facilities with the Hobart and Ceduna telescopes of the University of Tasmania for VLBI observations. Telescopes at Tidbinbilla, Warkworth (New Zealand), Hartebeesthoek (South Africa), and a single ASKAP dish also participate on occasions. The LBA operates in the standard radioastronomy bands between 1.4 and 22 GHz. The newest element of the ATNF is the 36 antenna, wide-field ASKAP array. ASKAP is being outfitted with Phased Array Feeds, each covering 30 square degrees of sky with a 300MHz bandwidth between 700MHz and 1.8 GHz. The array is currently being commissioned, providing experience in the beamforming and calibration of the novel feeds. In the first years of operation it is expected ~75% of the observing time will be dedicated to a number of large survey projects.