

Academia Sinica Press Release

Gigantic Digital Imaging Camera Installed on Subaru Telescope to Unravel Mysteries of Dark Energy

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An international collaboration of astronomers led by the National Astronomical Observatory of Japan (NAOJ) and including a group of scientists from the Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) installed a gigantic digital optical camera on the Subaru Telescope on August 16-17, 2012. The Hyper Suprime-Cam (HSC) increases the Subaru Telescope's field-of-view seven times and will help researchers unravel current hot topics in astrophysics, such as the mysteries of dark energy and dark matter and the cause of the accelerating expansion of the universe.

The HSC is an enormous 870-megapixel ultra-wide-field camera that weighs 3 tons and stands 3 meters high. Its main components facilitate the capture of high-resolution images of faint objects in the far distant Universe. The HSC greatly increases the field of view of the Subaru telescope's wide-field imager from the 0.5 degrees achieved with the current wide-field imager (named Suprime-Cam) to 1.5 degrees. The HSC incorporates cutting edge technology such as 116 innovative, highly sensitive charge-coupled devices (CCDs); a wide field corrector, which corrects for optical aberrations and atmospheric dispersion; and a new prime focus unit.

"The HSC is truly the most powerful optical camera ever built. It will allow the scientific teams to study the nature of dark matter and dark energy. This is the first time that Taiwan has participated in the development of frontier instrumentation in optical astronomy. We are looking forward to the participation of Taiwan in this wonderful scientific adventure," remarked the Director of ASIAA, Dr. Paul Ho.

Associate Research Fellow at ASIAA, Dr. Keiichi Umetsu further enthused: "The combination of exceptional wide-field capability and excellent image quality makes HSC the ideal instrument for cosmological studies. The new survey data will provide critically important constraints on our understanding of the universe."

The Subaru HSC project marks the first collaboration between ASIAA and the Subaru

Telescope. It is also the first project on which Taiwan astronomers have worked with an 8-10 meter class telescope. The HSC team was established in 2008. Major collaborators include the NAOJ; the Kavli Institute for the Physics and Mathematics of the Universe, Japan; the University of Tokyo; ASIAA; Princeton University, and several companies from the industrial sector.

“The development of HSC has provided an excellent opportunity for ASIAA to be involved in an advanced astronomical instrument” said Dr. Shiang-Yu Wang, the leader of the HSC project at ASIAA. “We did not only experience technological challenges, but also the cultural differences and group spirit for the best of the instrument.”

The Subaru Telescope is the flagship telescope of the NAOJ. It is one of the largest and most advanced optical telescopes in the world and is located at the summit of Mauna Kea in Hawaii.

Related Website:

<http://www.naoj.org/Topics/2012/09/12/index.html>

http://www.asiaa.sinica.edu.tw/news/_upload/201209_HyperSuprime.pdf

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