

ハワイ・ハレアカラ惑星・系外惑星専用望遠鏡2016-2017年成果：東北大-ハワイ大 連携T40・T60観測および.8m口径PLANETS計画

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Haleakala T40 and T60 telescopes and the 1.8-m PLANETS project for planetary and exoplanetary observations in 2016-2017

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We report the current status of the T40 and T60 telescope activities including the onboard instruments as well as the updates of 1.8-m aperture telescope PLANETS project at Haleakala dedicated to planetary and exoplanetary observations. Continuous monitoring is essential to understand the planetary atmospheric phenomena, and therefore, own facilities with even small- and medium sized telescopes and instruments are important. The location of our telescopes, the Haleakala High Altitude Observatories at the summit of Mt. Haleakala is sufficiently high (3050m), and one of the best sites with clear sky, good seeing, and low humidity conditions. Operation is relatively easy because we can access to the airport, major towns, and a good engineering facility, ATRC (Advanced Technology Research Center) of University of Hawaii/Institute for Astronomy within 1-2 hour drive.

On the summit, our group is now operating a 40 cm Schmidt-Cassegrain (T40) and 60 cm Cassegrain (T60) telescopes. The T40 telescope is mainly observing faint atmospheric features such as Io torus, Mercury, Lunar sodium tail, and so on. From fall 2013, ISAS Hisaki/Exceed EUV space telescope run on the orbit. It has uniquely provided long-term Io torus activities for this project, including the identification of Io volcanic enhancement in January-March 2015. The T60 telescope was moved from Iitate Observatory and started the operation from Sep. 2014. This telescope is now observing planetary atmospheres in infrared with newly developed Infrared heterodyne spectrometer (MIRAH). In addition, high- and medium-resolution grating spectrometers with coronagraph to observe the Io's sulfur ion torus, Io's sodium cloud, and the Enceladus oxygen and water ion torus. Further, the polarization imager called DIPOL-2 is installed to measure the weak polarization of exoplanetary light. These activities are open to any possible collaborators. For example, guest observers visited for Jupiter (Dr. Asada, Kyushu Inst. Univ.), Mercury (Dr. Kameda and colleagues, Rikkyo Univ.) and exoplanets (Dr. Berdyugin, Univ. Turk, Finland, and Dr. Berdyugina, KIS, Germany) observations. Our and guest investigators' observations are also linked to Venus (Akatsuki), Mars (Mars Express, MAVEN) and Jupiter (Juno) in the 2015-2016 observation period.

In addition, we are currently carrying out a new telescope project PLANETS. This is a 1.8m off-axis telescope, which is under the international consortium mainly formed with IfA/UH and KIS (Germany). Although the schedule is delayed by the mirror forming etc., in the earliest case, we will see the first light in the late 2017. To promote these observations, project and instrument developments, T. Sakanoi and M. Yoneda will be stay in IfA/UH, Maui for next one year, M. Kagitani and H. Nakagawa will frequently visit the observatory, and T. Obara and Y. Kasaba proceed the agreement issue between international consortium for PLANETS.

Any collaboration for science and instrument is very welcome to whom have interest to use our facilities. To encourage the collaboration, Planetary Plasma and Atmospheric Research Center (PPARC) of Tohoku University starts to call for collaborative research programs with funding support. For the applications and guidelines, refer to the PPARC web site at <http://pparc.gp.tohoku.ac.jp>.