

ハワイ・ハレアカラ山頂の惑星／系外惑星専用望遠鏡：40cm・60cm 活動状況および1.8m 新設計画

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Telescopes Dedicated to Planets and Exoplanets at Haleakala, Hawaii: Activity of 40cm and 60cm and Development of 1.8m telescopes

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In this paper, activity reports and development status of the University-sized small but unique telescopes extracted at the summit of Mt. Haleakala of Maui Island, Hawaii by Tohoku University with domestic and international collaborations.

Clear sky and good seeing condition are important for any ground-based observations. The Haleakala High Altitude Observatories at the summit of Mt. Haleakala is not the highest place (3050m) but 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 IfA/UH within 1-2 hour drive from summit.

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 (MIRAHI). And with other instruments including a high-dispersion spectrometer with coronagraph and an optical polarimeter, we have observed Jupiter and exoplanets in 2014-2015.

These activities are open to any possible collaborators. Recent days, guest observers visited for Jupiter (Dr. Asada, Kyushu Inst. Univ.), Mercury (Dr. Kameda and colleagues, Rikkyo Univ.) and Exoplanets (Univ. Turk, Finland, and KIS, Germany) observations. Our and guest investigators' observations are also linked to Venus (Akatsuki), Mars (Mars Express, MAVEN) and Jupiter (Juno) in 2015-2016 observation terms.

We are also running a new telescope development plan dedicated to planets and exoplanets. This 1.8m off-axis telescope named PLANETS (Polarized Light from Atmospheres of Nearby Extra Terrestrial Planets) 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 2016.

It is welcomed to any planet and exoplanet observation scientists who have interest to use our facility or expect to attach their own instruments for specific objectives. For promoting such activities, M. Kagitani, H. Nakagawa, and M. Yoneda stay in or visit frequently to Maui, and are contributing to the telescope/instrumental operations and developments.