New Telescope Project at Mt. Haleakala, Hawaii

Shoichi Okano[1]; Yasumasa Kasaba[2]; Masato Kagitani[1]

[1] PPARC, Tohoku Univ.; [2] Tohoku Univ.

Clear sky and good seeing condition are definitely important for ground-based observation of planets. The summit of Mt. Haleakala in Maui, Hawaii is one of the best observation sites in the world because of high percentage of clear skies and good seeing conditions, as well as good accessibility despite its high altitude (elv. 3,000m). Haleakala High Altitude Observatory is operated by the Institute for Astronomy (IfA), University of Hawaii, and we, Tohoku University group, have been making observation of planets there since 2000. Currently, our observation facility consists of a 2.6m dome that houses a 40cm Schmidt-Cassegrain telescope.

Using the 40cm telescope at Haleakala, we have so far been making observations of Io plasma torus, Mercury sodium tail and so on. But, due to a Schmidt correction plate in the 40cm telescope, it is impossible to make observation in the infrared region. Infrared observations are necessary for the study of molecular atmospheres on planets, or infrared aurora on Jupiter and its relation to Io's activity. We are also using a 60cm telescope at our Iitate observatory for planetary observations, and infrared observation is possible with the 60cm telescope. However, infrared observation at Iitate (elv. 614m) is almost hopeless due to strong absorption of water vapor at the low altitude. To realize infrared observations, we need to have a dedicated telescope at a good site with high altitude. With this in mind, we have been searching a possibility to have a new dedicated telescope at Haleakala. After a negotiation with UH IfA, we came to a point to start a new telescope project.

The new telescope project is called PLANETS (Poralized Light from Atmospheres of Nearby Extra Terrestrial Planets) and we will construct the new telescope (tentatively named as JHET; Japan Hawaii Europe Telescope) in collaboration with UH IfA and ETH Zurich in Switzerland. The telescope will be dedicated for spectropolarimetric observation of extra terrestrial planets by UH IfA and ETH Zurich, and for observation of planetary plasma and atmospheres of solar system bodies by Tohoku University.

Basic design of JHET consists of an off-axis primary mirror with a diameter of 1.5-2m, and Gregorian optics on an equatorial mount. First light is expected before the end of 2010.