The NASA Infrared Telescope Facility (IRTF): New Observational Capabilities

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1. INTRODUCTION

The NASA Infrared Telescope Facility (IRTF) is a 3.0m infrared telescope located at an altitude of 4.2 km near the summit of Maunakea on the island of Hawaii. The IRTF was established by NASA to obtain solar system observations of interest to NASA. The important capabilities of the IRTF are: (1) The IRTF supports remote observing from any site having a high-speed Internet connection. Remote observing eliminates the need for travel to the observatory, and therefore short observing time slots (one hour or longer) can be scheduled. As an option to remote observing, we also welcome onsite visiting astronomers and students. (2) Instrument changes during the night can be accommodated. (3) Observing periods as short as one hour can be scheduled. (4) Daytime observing is supported. (5) Unique instruments for planetary science are available.

Providing ground-based support of planetary missions is the main objective of the IRTF. The funding for IRTF operations was renewed in May 2014 for 5 years.

2. INSTRUMENTS

Current instruments include: (1) SpeX, a 0.75–5.3 μm moderate-resolution spectrograph and camera, (2) MORIS, a high-speed CCD imager attached to SpeX for simultaneous visible and near-infrared observations, and (3) CSHELL, a 1–5 μm high-resolution spectrograph. MORIS can also be used as a visible wavelength guider for SpeX. For further information on the IRTF and its instruments including visitor instruments, see: http://irtfweb.ifa.hawaii.edu/.

We plan to replace CSHELL with iSHELL, a 1.2–5.4 μm high-resolution cross-dispersed echelle spectrograph providing a resolving power of 70,000 with a 0.375" wide slit. Slit lengths of 5", 15", and 25" are available depending on the orders selected. This instrument will be commissioned in semester 2016A (February–July 2016) and be available for users in semester 2016B (August 2016–January 2017). Due to the many observing modes that are possible with this instrument the details of the various combinations of slit widths, slit lengths, and wavelength coverage is described by Rayner et al. 2012, Proc. SPIE, 8446, id. 84462C.

We also plan to restore to service our 8-25 μm camera, MIRSI. This will occur in semester 2016B or 2017A. The upgraded MIRSI will have a closed-cycle cooler that will allow it to be continuously available for thermal infrared observations of near-Earth objects.

3. APPLYING FOR TELESCOPE TIME

Due dates for proposals are 01 April and 01 October of each year for the August–January and February–July time periods. Use the online application form at: http://irtfweb.ifa.hawaii.edu/observing/applicationForms.php

4. ACKNOWLEDGMENTS

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Further information on the web:

IRTF home page:
http://irtfweb.ifa.hawaii.edu

IRTF instruments:
http://irtfweb.ifa.hawaii.edu/Facility

IRTF science highlights:
http://irtfweb.ifa.hawaii.edu/research/science.php

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The instrument (SHELL) (1 meter in length) is undergoing testing in the lab. It will provide a resolving power of 70,000 at 1.2–5.5 μm in a cross-dispersed format.

An example of the spectral coverage offered by iSHELL.

An example of the spectral lines that could be simultaneously observed with 2 grating settings with iSHELL. This demonstrates vividly the high spectral grasp of iSHELL. From M. DiSanti, private comm.