THE MIT-HAWAII-IRTF JOINT CAMPAIGN FOR NEO SPECTRAL RECONNAISSANCE. R. P. Binzel[1], C. A. Thomas[1], F. E. DeMeo[1], A. Tokunaga[2], A. S. Rivkin[3], and S. J. Bus[4], [1]Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA 02139, rpb @ mit.edu, [2]Institute for Astronomy, University of Hawaii, 2680 Woodlawn Drive, Honolulu, HI 96822, tokunaga @ ifa.hawaii.edu, [3]Johns Hopkins University Applied Physics Laboratory, 11100 Johns Hopkins Road, Laurel, MD 20723, andy.rivkin @ jhuapl.edu, [4]Institute for Astronomy, 640 N. A'ohoku Place, Hilo, HI 96720.

Introduction: We describe an ongoing joint observing program for routine measurement of near-Earth object (NEO) spectra being conducted by MIT, the University of Hawaii, and the NASA Infrared Telescope Facility (IRTF) on Mauna Kea, Hawaii. All spectroscopic observations obtained in this campaign are being made publicly available in near-real time via the website:

http://smass.mit.edu/

and are also linked through the IRTF website. http://irtfweb.ifa.hawaii.edu/

Spectra for nearly 80 NEOs are presently available.

Program Description: On the 3-meter NASA IRTF, we utilize SpeX, a low-to-medium resolution near-infrared spectrograph and imager [1], to obtain 0.8- to 2.5-micron spectra of near-Earth objects. Under good seeing conditions the limiting magnitude for our program is near V17.5. This program has been granted long-term planetary status and utilizes approximately one night per month. This frequent access enables routine reconnaissance of both newly discovered and previously known near-Earth objects. Most observations are being conducted remotely from the MIT campus. We have as an operational goal to process and make available the spectral results within a few days of the observations. We post these data for the public domain via our website http://smass.mit.edu. While we welcome collaboration opportunities, there is no pre-condition for collaboration for any researcher wishing to use these data. Our website gives a suggested acknowledgement for the use of these data.

Program Science Goals: Our science goals are to provide an ongoing source of current spectral measurements allowing broad characterization of the near-Earth object population. Particular emphasis is placed on observations enhancing our understanding of the interrelationships between asteroids and meteorites, and between asteroids and comets. NEOs in orbits that may be most easily accessible as spacecraft targets are given priority, as well as NEOs in potentially hazardous orbits. Our recent published results [2] include the modeling of the thermal flux component detected shortward of 2.5 microns in the case of dark objects in the vicinity of 1 AU. Measurement of the thermal flux provides a direct constraint on the albedo. Additionally, our overall survey statistics [3,4] are suggesting that extinct comets may constitute a larger fraction of the NEO population than generally considered. Our survey results suggest 15 +/- 5% of the entire debiased NEO population may be comprised by extinct comets, where the debias analysis takes into account the difficulty of discovering low albedo NEOs residing in high eccentricity orbits.

Concluding Remarks: We welcome broad community participation in target selection, observing, and data utilization for this program. Interested persons should contact the P.I. (Binzel) or the IRTF Director (Tokunaga) at the email addresses given above.

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References: [1] Rayner, J. T. et al. (2003). PASP 115, 362. [2] Rivkin, A. S. et al. (2005). *Icarus* 175, 181. [3] DeMeo, F. E. et al. (2005), *Asteroids Comets Meteors 2005* (abstract). [4] Binzel, R. P. et al. (2006), *Proc. IAU Symposium 229*, in press. [5] McFadden, L. A. et al. (1985), *Science* 229, 160. [6] Binzel, R. P. et al. (2004), *Icarus* 170, 259.

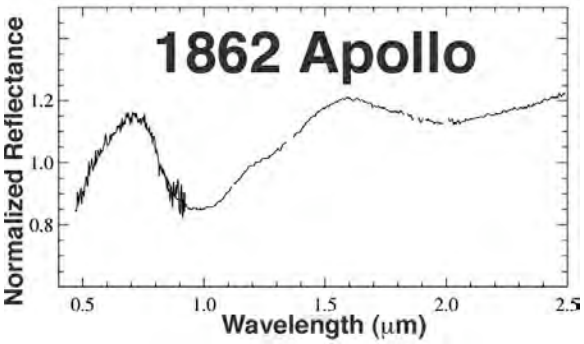

Figure 1: Example spectrum for one among the nearly 80 individual NEOs having spectra publicly available at http://smass.mit.edu. 1862 Apollo is a Q-type asteroid, possibly related to ordinary chondrite meteorites [5]. The visible wavelength portion of the spectrum is from [6].