FIRST SOLAR SYSTEM RESULTS OF THE SPITZER SPACE TELESCOPE. J. Van Cleve[1], D. P. Cruikshank[2], J. A. Stansberry[3], M. J. Burgdorf[4], D. Devost[5], J. P. Emery[2], G. Fazio[6], Y. R. Fernandez[7], W. Glaccum[4], C. Grillmair[4], J. R. Houck[5], V. S. Meadows[4], P. Morris[4], W. T. Reach[4], H. Reitsema[1], G. H. Rieke[3], M. W. Werner[4], IRAC Team[6,8],IRS Team[5], and MIPS Team[3], [1]Ball Aerospace and Technologies Corp. (1600 Commerce St., Boulder, CO 80301; jvanclev@ball.com), [2]NASA Ames, [3]Steward Observatory, University of Arizona, [4]Spitzer Science Center, CalTech, [5]Cornell University, [6]Smithsonian Astrophysical Observatory, [7]University of Hawaii,[8]NASA Goddard

Introduction: The Spitzer Space Telescope, formerly known as SIRTF, is now operational and delivers unprecedented sensitivity for the observation of Solar System targets. Spitzer's capabilities and first general results were presented at the January 2004 AAS meeting. In this poster, we focus on Spitzer's performance for moving targets, and the first Solar System results.

Spitzer has three instruments, IRAC, IRS, and MIPS. IRAC (InfraRed Array Camera) provides simultaneous images at wavelengths of 3.6, 4.5, 5.8, and 8.0 μm. IRS (InfraRed Spectrograph) has 4 modules providing low-resolution (R=60-120) spectra from 5.3 to 40 μm, high-resolution (R=600) spectra from 10 to 37 μm, and an autonomous target acquisition system (PeakUp) which includes small-field imaging at 15 μm. MIPS (Multiband Imaging Photometer for SIRTF) does imaging photometry at 24, 70, and 160 μm and low-resolution (R=15-25) spectroscopy (SED) between 55 and 96 μm.

Guaranteed Time Observer (GTO) programs include the moons of the outer Solar System, Pluto, Centaurs, Kuiper Belt Objects, and comets

The "Moons and Planets" program: For example, the "IRS_moons_and_planets" program is now examining the principal satellites of outer Solar System planets, as well as Uranus and Neptune, using all SIRTF instruments. IRAC photometry will establish the hitherto unknown albedo of these cold objects at wavelengths between 3.5 and 8 microns, IRS will do reflectance spectrosopy at wavelengths between 5.3 and 15 μm, and thermal emission spectroscopy between 10 and 40 μm. Combined with MIPS photometry and SED measurements, these data willl provide compositional information, albedo, and thermal properties of these objects.

All synchronous satellites are observed at leading and trailing hemispheres, while in addition the sub-Neptune hemisphere of Triton, and a series of follow-on measurements of this particularly interesting moon, are performed. The observations of Uranus and Neptune will be used to monitor changes in Uranus and Neptune atmospheres with season [1,2], for trace composition data, and for precise straylight subtraction for observations of their innermost principal satellites. We will observe Titan to compare spectra of the hemisphere centered on the "continent" seen in near-IR Hubble images [3] to spectra of other Titan longitudes, and interpret these differences in terms of surface composition and temperature.

In our poster, we present the first Solar System results of SIRTF, including but not limited to:

1. Verification of moving target acquisition for the IRS
2. Thermal detection of small main belt asteroids.
3. Spectra of Uranus and Neptune, and images of Uranus and his moons between 3.5 and 15 μm, as shown in Figures 1 and 2.
4. Images and spectra of such moons of Saturn as are scheduled for observation between March 1 and the beginning of this conference.

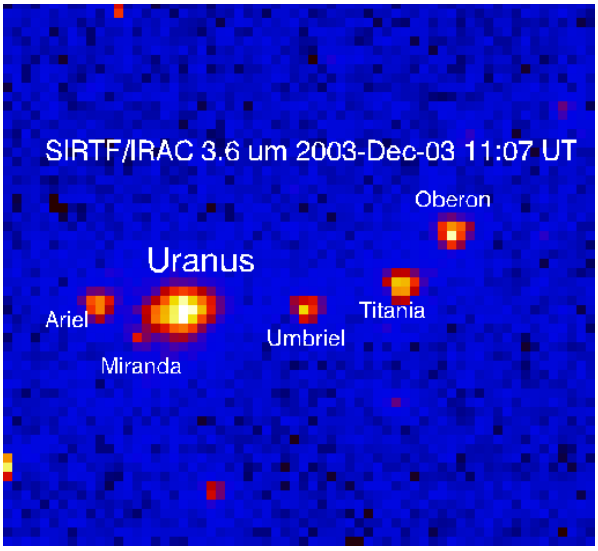

Figure 1: Uranus and his moons, imaged by the SIRTF/IRAC camera at 3.6 microns

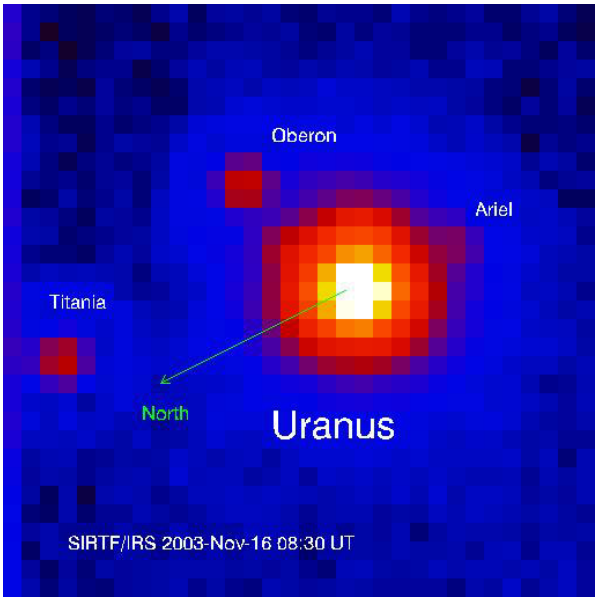

Figure 2: Uranus and his moons, imaged by the SIRTF/IRS PeakUp target acquisition camera at 15 microns. Celestial North is shown.

References: [1] Hammel H. B., Young, L. A, Hackwell J., Lynch D. K., Russell R., and Orton G. S. (1992) *Icarus, 99*, 347. [2] Hammel, H. B., Rages K., Lockwood G. W., Karkoschka E., and de Pater I. (2001) *Icarus, 153*, 229. [3] Smith, P. H., Lemmon, M. T., Lorenz, R. D., Sromovsky, L. A., Caldwell, J. J., and Allison, M. D. (1996) *Icarus, 119*, 336.

A complete description of Spitzer for observers may be found at the Web site http://ssc.spitzer.caltech.edu.