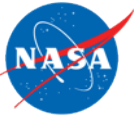
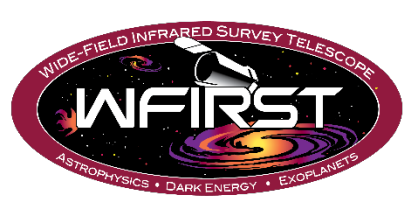


Solar System Science with WFIRST



Stefanie Milam and Gerbs Bauer – SSWG Co-Lead



Planetary Science

- Seeking input from the Planetary Science community
- A New FSWG Working Group has just been set up
- Looking for Guest Observer science ideas
- Would like input on requirements and capabilities of WFIRST

Contact:

Jason Rhodes (WFIRST Deputy Project Scientist at JPL)

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Gerbs Bauer (FSWG Planetary Science Working Group Co-lead) James.M.Bauer@jpl.nasa.gov

Stefanie Milam (FSWG Planetary Science Working Group Co-lead) stefanie.n.milam@nasa.gov

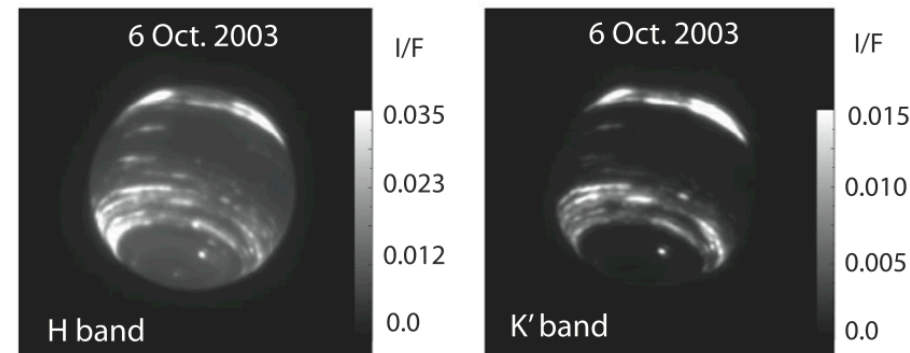
Solar System Needs

1. Non-Sidereal Tracking

- *Moving Targets (≥ 60 mas/s to track small bodies in inner solar system)*

2. Large dynamic range

- *Giant Planets vs Kuiper Belt Objects*



De Pater et al. 2014

3. Targets of Opportunity and Time Critical Observations

- *Comets, Storms, Impact events, etc.*

4. Multiple Epoch Observations

- *Seasonal Observations, Atmospheric features, Ring-Crossing, etc.*

Possible Science Cases under investigation by the SSWG

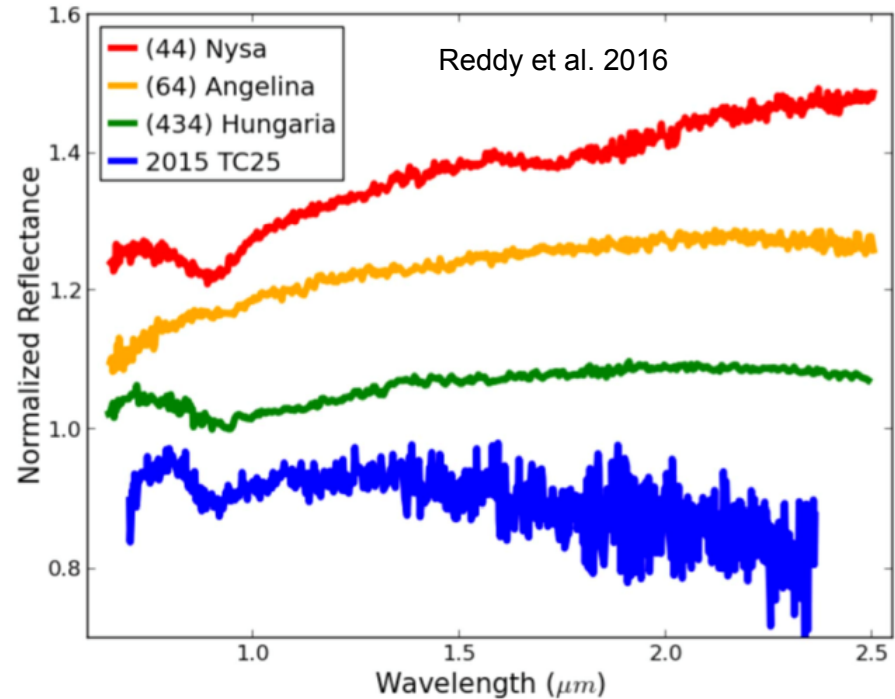
Identification and Characterization of Small Body Binaries and (Rare, Active Main Belt Objects) RAMBOs

- Could utilize well-characterized PSF capabilities
- Define Cadences
- Coronagraph – could also identify extended structure: Activity and rings.

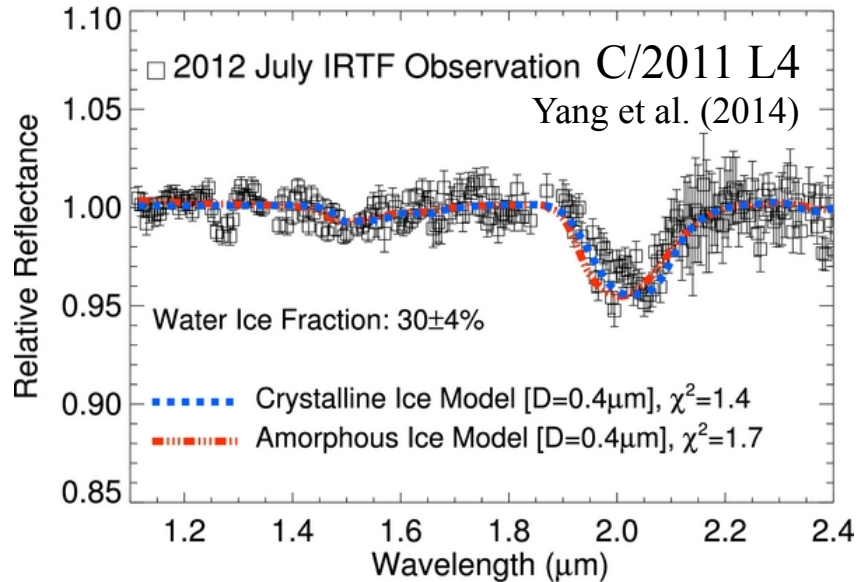


Mineralogy of Main Belt Asteroids and Trojans

- IFU
 - Targeted
 - Full wavelength range (0.6-2 um)
 - lower resolution
- Short exposure series GRISM
 - Untargeted?
 - higher resolution
 - 1 - 1.89 um wavelength range (nominally)
 - This would require a repeated series of short exposures with special cadence.

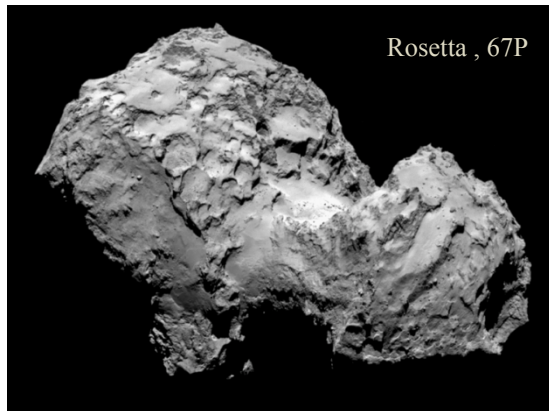


Possible Science Cases under investigation by the SSWG



Surface Volatiles on Cometary Nuclei, Centaurs and TNOs

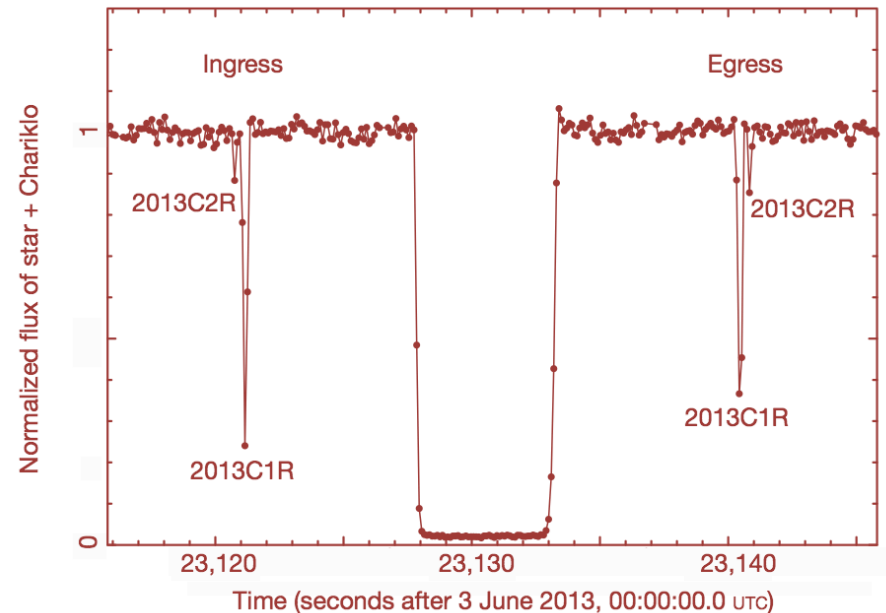
- IFU or GRISM
- “Short Exposures” (but factor of ~10 longer)
 - H_2O , CO_2 , CH_4 , etc.
- Comets could show emission
 - e.g. 1.65 μm water-ice



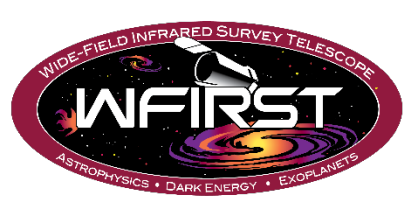
Possible Science Cases under investigation by the SSWG

Occultations

- Untargeted, broad survey, like FGS/HST and Whipple
- Targeted, of known objects with known stellar occ. Candidates
- Both require several to several 10s of Hz sampling, esp. for small bodies.

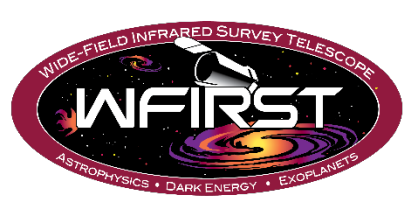


(10199) Chariklo Ring System Occultation (3 June 2013), Braga-Ribas et al. 2014



Current SSWG Participants

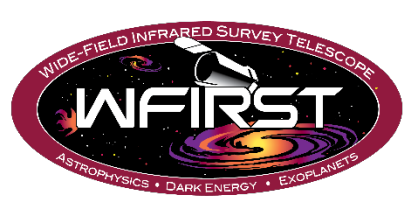
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Amanda	Bosh	MIT	asbosh@mit.edu ↗



Investigation Teams as of Dec 30th



- KBOs/TNOs/Centaurs/Binaries: Bannister, Trilling, Ragozzine, Bauer
- Satellites: Bjorker, Holler
- Giant Planets: Bjorker
- Asteroids/NEOs/PHAs: Harderson (Lead), Rivken, Haghighipour
- Comets: Kramer, Milam
- Occultations: Bauer, Bosh



Thank You!



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- Stay tuned for more!