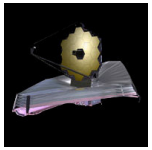

2550 - The First Near-IR Spectroscopic Survey of Neptune Trojans

Cycle: 1, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1	NIRSpec IFU:2008 LC 18	NIRSpec IFU Spectroscopy	(2) 2008LC18
	3	NIRSpec IFU: 2011 WG157	NIRSpec IFU Spectroscopy	(6) 2011WG157
	5	NIRSpec IFU: 2013 KY18	NIRSpec IFU Spectroscopy	(4) 2013KY18
	15	NIRSpec IFU: 2013 KY18+HOPR	NIRSpec IFU Spectroscopy	(4) 2013KY18
	7	NIRSpec IFU: 2011 HM102	NIRSpec IFU Spectroscopy	(3) 2011HM102
	16	NIRSpec IFU: 2011 HM102	NIRSpec IFU Spectroscopy	(3) 2011HM102
	10	NIRSpec IFU: 2013 VX30	NIRSpec IFU Spectroscopy	(5) 2013VX30

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
	11	NIRSpec IFU: 2006 RJ 103	NIRSpec IFU Spectroscopy	(12) 2006RJ103
	12	NIRSpec IFU: 2007 VL 305	NIRSpec IFU Spectroscopy	(8) 2007VL305
	13	NIRSpec IFU: 2011 SO 277	NIRSpec IFU Spectroscopy	(7) 2011SO277
	14	NIRSpec IFU: 2010 TS 191	NIRSpec IFU Spectroscopy	(11) 2010TS191

ABSTRACT

Trojan asteroids, which librate around a planet's L4 or L5 point, are thought to be remnants of our primordial disk as the strong 1:1 resonance means they can be stable on order the age of the Solar System. This resonance relationship means that Trojans are also tied to the evolution of their planet, meaning that giant planet Trojans can also be used to constrain planetary migration models. Neptune Trojans (NTs) are a particularly puzzling population; while they are expected to have a mix of red and ultra-red surfaces, only one ultra-red NT has been discovered to date. It is possible that collisions between NTs and Plutinos shifted the NT colors blueward over time, but colors are limited in their capacity to answer this question as a variety of processes and compositions can affect the colors of planetary bodies, often in ways that are indistinguishable from each other. Near-IR spectra can provide more information about these planetary surfaces as many broad molecular absorption features occur at these wavelengths. In particular, these features can be used to measure ice composition, ice irradiation products, surface grain size, and the ice phase. Therefore, we propose to take the first near-IR spectroscopic survey of NTs in order to study the ultra-red NT's surface in more detail, compare L4 and L5 NTs, and compare unstable NTs to Centaurs. JWST is vital to this program as these objects are too faint to take reasonable spectra using ground-based facilities. Regardless of the exact outcomes, these measurements would lead to a better understanding of the formation and evolution of NTs and the giant planets.

OBSERVING DESCRIPTION

The requested observations are to take Near-IR reflectance spectra of 9 Neptune Trojans. We will be using the NIRSpec IFU with the PRISM for all of the targets. We will not be doing any target aquisition, instead doing a blind pointing into the IFU FOV; the positional uncertainties for all of our targets + the pointing uncertainty will be less than 1.5" at the time of observation. We will also be using a 2-point nod dither pattern and the NRSIRS2RAPID readout pattern for all of our targets. All of our targets are distant Solar System objects, meaning they will be point sources and will not exceed the angular rate of motion limit. Our list of targets (with overall science time) is as follows:

- 2008 LC18 - 3.24 hrs

- 2011 WG157 -0.8 hrs
- 2013 KY18 - 0.8 hrs
- 2011 HM102 - 2 hrs
- 2013 VX30 - 1 hrs
- 2006 RJ103 - 0.8 hrs
- 2007 VL305 - 1.2 hrs
- 2011 SO277 - 1.2 hrs
- 2010 TS191 - 1.6 hrs

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(2)	2008LC18	TYPE=ASTEROID,A=29.97845246407347,E=0.0821 2062239951003,I=27.54563521591276 ,O=88.52181569721543,W=4.501877982547414,M=1 73.0874734134576,EQUINOX=J2000,EPOCH=06- DEC-2010:00:00:00,EpochTimeScale=TDB		
Comments: Extended=NO				
(3)	2011HM102	TYPE=ASTEROID,A=30.09538703670931,E=0.0808 8528840764816,I=29.40126897533223 ,O=100.9845195737104,W=150.8708234425348,M=3 0.00489191150137,EQUINOX=J2000,EPOCH=13- OCT-2015:00:00:00,EpochTimeScale=TDB		
Comments: Extended=NO				
(4)	2013KY18	TYPE=ASTEROID,A=30.09367246227409,E=0.1199 302420130724,I=6.66666264690572 ,O=84.37964460322182,W=272.0951307360017,M=2 68.5857719366944,EQUINOX=J2000,EPOCH=13- JUN-2014:00:00:00,EpochTimeScale=TDB		
Comments: Extended=NO				
(5)	2013VX30	TYPE=ASTEROID,A=29.99285072712266,E=0.0810 8962695663401,I=31.3156275126841 ,O=192.5936006554463,W=215.9997287414345,M=3 54.8715457124965,EQUINOX=J2000,EPOCH=15- MAR-2017:00:00:00,EpochTimeScale=TDB		
Comments: Extended=NO				
(6)	2011WG157	TYPE=ASTEROID,A=30.14344849272891,E=0.0251 0574107795911,I=22.30730913734335 ,O=352.2065335942297,W=208.6162470227846,M=2 09.1058413920198,EQUINOX=J2000,EPOCH=09- OCT-2013:00:00:00,EpochTimeScale=TDB		
Comments: Extended=NO				
(7)	2011SO277	TYPE=ASTEROID,A=30.17605555226,E=0.0105086 2356566994,I=9.639256708157946 ,O=113.6297417760062,W=109.9244984541616,M=1 57.3333963691748,EQUINOX=J2000,EPOCH=23- APR-2014:00:00:00,EpochTimeScale=TDB		
Comments: Extended=NO				
(8)	2007VL305	TYPE=ASTEROID,A=30.04784382993455,E=0.0638 1908359787364,I=28.14830297489237 ,O=188.6788251879345,W=218.4465487177607,M=4. 080355504354901,EQUINOX=J2000,EPOCH=10- MAY-2015:00:00:00,EpochTimeScale=TDB		
Comments: Extended=NO				
(11)	2010TS191	TYPE=ASTEROID,A=30.06978282762057,E=0.0484 159579725588,I=6.562455736856282 ,O=129.6863742821731,W=300.6891491572829,M=3 36.2929128423378,EQUINOX=J2000,EPOCH=14- JUL-2014:00:00:00,EpochTimeScale=TDB		
Comments: Extended=NO				
(12)	2006RJ103	TYPE=ASTEROID,A=30.01224975469107,E=0.0320 1004764801209,I=8.161717817189137 ,O=120.955300571334,W=27.48415663972399,M=25 2.8633134117483,EQUINOX=J2000,EPOCH=16- JUN-2015:00:00:00,EpochTimeScale=TDB		
Comments: Extended=NO				

Observation

Proposal 2550, Observation 1: NIRSpec IFU:2008 LC18 Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(2)	2008LC18	TYPE=ASTEROID,A=29.97845246407347,E=0.0821 2062239951003,I=27.54563521591276 ,O=88.52181569721543,W=4.501877982547414,M=1 73.0874734134576,EQUINOX=J2000,EPOCH=06- DEC-2010:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	22	6	false	true	NONE	4	24	8053.067	61740

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2008LC18 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 3: NIRSpec IFU: 2011 WG157

Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(6)	2011WG157	TYPE=ASTEROID,A=30.14344849272891,E=0.0251 0574107795911,I=22.30730913734335 ,O=352.2065335942297,W=208.6162470227846,M=2 09.1058413920198,EQUINOX=J2000,EPOCH=09- OCT-2013:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	25	2	false	true	NONE	4	8	3034.489	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2011WG157 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 5: NIRSpec IFU: 2013 KY18 Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(4)	2013KY18	TYPE=ASTEROID,A=30.09367246227409,E=0.1199302420130724,I=6.66666264690572,O=84.37964460322182,W=272.0951307360017,M=268.5857719366944,EQUINOX=J2000,EPOCH=13-JUN-2014:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	25	2	false	true	NONE	4	8	3034.489	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2013KY18 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 15: NIRSpec IFU: 2013 KY18+HOPR Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 15:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(4)	2013KY18	TYPE=ASTEROID,A=30.09367246227409,E=0.1199302420130724,I=6.66666264690572,O=84.37964460322182,W=272.0951307360017,M=268.5857719366944,EQUINOX=J2000,EPOCH=13-JUN-2014:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	25	2	false	true	NONE	4	8	3034.489	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2013KY18 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 7: NIRSpec IFU: 2011 HM102

Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(3)	2011HM102	TYPE=ASTEROID,A=30.09538703670931,E=0.0808 8528840764816,I=29.40126897533223 ,O=100.9845195737104,W=150.8708234425348,M=3 0.00489191150137,EQUINOX=J2000,EPOCH=13-OCT-2015:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	25	5	false	true	NONE	4	20	7586.223	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2011HM102 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 16: NIRSpec IFU: 2011 HM102 Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Comments: HOPR copy of obs. 7

Diagnostics

(Visit 16:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(3)	2011HM102	TYPE=ASTEROID,A=30.09538703670931,E=0.0808 8528840764816,I=29.40126897533223 ,O=100.9845195737104,W=150.8708234425348,M=3 0.00489191150137,EQUINOX=J2000,EPOCH=13-OCT-2015:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	25	5	false	true	NONE	4	20	7586.223	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2011HM102 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 10: NIRSpec IFU: 2013 VX30 Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 10:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(5)	2013VX30	TYPE=ASTEROID,A=29.99285072712266,E=0.0810 8962695663401,I=31.3156275126841 ,O=192.5936006554463,W=215.9997287414345,M=3 54.8715457124965,EQUINOX=J2000,EPOCH=15- MAR-2017:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	30	2	false	true	NONE	4	8	3618.045	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2013VX30 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 11: NIRSpec IFU: 2006 RJ103

Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 11:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(12)	2006RJ103	TYPE=ASTEROID,A=30.01224975469107,E=0.0320 1004764801209,I=8.161717817189137 ,O=120.955300571334,W=27.48415663972399,M=25 2.8633134117483,EQUINOX=J2000,EPOCH=16- JUN-2015:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	25	2	false	true	NONE	4	8	3034.489	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2006RJ103 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 12: NIRSpec IFU: 2007 VL305 Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 12:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(8)	2007VL305	TYPE=ASTEROID,A=30.04784382993455,E=0.0638 1908359787364,I=28.14830297489237 ,O=188.6788251879345,W=218.4465487177607,M=4. 080355504354901,EQUINOX=J2000,EPOCH=10- MAY-2015:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	25	3	false	true	NONE	4	12	4551.734	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2007VL305 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 13: NIRSpec IFU: 2011 SO277 Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 13:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(7)	2011SO277	TYPE=ASTEROID,A=30.17605555226,E=0.0105086 2356566994,I=9.639256708157946 ,O=113.6297417760062,W=109.9244984541616,M=1 57.3333963691748,EQUINOX=J2000,EPOCH=23-APR-2014:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	25	3	false	true	NONE	4	12	4551.734	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2011SO277 FROM JWST LESS THAN 0.03

Observation

Proposal 2550, Observation 14: NIRSpec IFU: 2010 TS191

Fri Dec 09 00:00:29 GMT 2022

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 14:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(11)	2010TS191	TYPE=ASTEROID,A=30.06978282762057,E=0.0484159579725588,I=6.562455736856282,O=129.6863742821731,W=300.6891491572829,M=336.2929128423378,EQUINOX=J2000,EPOCH=14-JUL-2014:00:00:00,EpochTimeScale=TDB		

Comments: Extended=NO

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	4	

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	NRSIRS2RAPID	25	4	false	true	NONE	4	16	6068.978	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE 2010TS191 FROM JWST LESS THAN 0.03