



# 10047 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Cycle: 5, Proposal Category: GO

## INVESTIGATORS

<i>Name</i>	<i>Institution</i>
<b>Dr. Rafael Luque (PI) (ESA Member)</b>	<b>Instituto de Astrofisica de Andalucia (IAA)</b>
Prof. Fei Dai (CoI) (CoPI) (US Admin CoI)	University of Hawaii
Mr. Zhecheng Hu (CoI) (CoPI)	Tsinghua University
Dr. Adrien Leleu (CoI) (ESA Member) (CoPI)	University of Geneva, Department of Astronomy
Dr. Matthew Conor Nixon (CoI) (CoPI)	Arizona State University
Dr. Hugh Osborn (CoI) (ESA Member) (CoPI)	University of Bern
Prof. Yann Alibert (CoI) (ESA Member)	University of Bern
Dr. Oscar Barragan (CoI) (ESA Member)	University of Oxford
Dr. Andrea Bonfanti (CoI) (ESA Member)	Austrian Academy of Sciences
Remo Burn (CoI) (ESA Member)	Observatoire de la Cote d'Azur
Brandon Park Coy (CoI)	University of Chicago
Dr. Anne Dattilo (CoI)	The Pennsylvania State University
Prof. Caroline Dorn (CoI) (ESA Member)	ETH Zurich
Dr. Jo Ann Egger (CoI) (ESA Member)	European Space Agency - ESTEC
Prof. Adina Feinstein (CoI)	Michigan State University
Dr. Matthew Hooton (CoI) (ESA Member)	University of Cambridge
Dr. Judith Korth (CoI) (ESA Member)	University of Geneva, Department of Astronomy
Man Hoi Lee (CoI)	University of Hong Kong
Dr. Kento Masuda (CoI)	Osaka University
Dr. Caroline Piaulet Ghorayeb (CoI)	University of Chicago
Dr. Michael Radica (CoI)	University of Chicago
Dr. James Graham Rogers (CoI) (ESA Member)	University of Cambridge
Ms. Marylyn Rosenqvist (CoI) (ESA Member)	University of Geneva, Department of Astronomy

JWST Proposal 10047 (Created: Friday, March 13, 2026, 1:04:03PM Eastern Standard Time) - Overview

<i>Name</i>	<i>Institution</i>
Dr. Nicholas Scarsdale (CoI)	University of California - Santa Cruz
Darryl Seligman (CoI)	Michigan State University
Dr. Julia Venturini (CoI) (ESA Member)	University of Geneva, Department of Astronomy
Dr. Luis Welbanks (CoI)	Arizona State University
Mr. Aaron Werlen (CoI) (ESA Member)	Ludwig Maximilian Universitat of Munich
Yue Yu (CoI) (ESA Member)	Instituto de Astrofísica de Andalucía (IAA)
Prof. Wei Zhu (CoI)	Tsinghua University

**OBSERVATIONS**

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
TOI-6109				
	1	Planet b - NIRISS	NIRISS Single-Object Slitless Spectroscopy	(1) TOI-6109
	2	Planet b - NIRSpec	NIRSpec Bright Object Time Series	(1) TOI-6109
	3	Planet c - NIRISS	NIRISS Single-Object Slitless Spectroscopy	(1) TOI-6109
	4	Planet c - NIRSpec	NIRSpec Bright Object Time Series	(1) TOI-6109
TOI-1136				
	5	Planet d - NIRISS	NIRISS Single-Object Slitless Spectroscopy	(2) TOI-1136
	6	Planet d - NIRSpec	NIRSpec Bright Object Time Series	(2) TOI-1136
	7	Planet f - NIRISS	NIRISS Single-Object Slitless Spectroscopy	(2) TOI-1136
	8	Planet f - NIRSpec	NIRSpec Bright Object Time Series	(2) TOI-1136
HD 110067				
	9	Planet b - NIRISS	NIRISS Single-Object Slitless Spectroscopy	(3) HD-110067
	10	Planet b - NIRSpec	NIRSpec Bright Object Time Series	(3) HD-110067
	11	Planet d - NIRISS	NIRISS Single-Object Slitless Spectroscopy	(3) HD-110067
	12	Planet d - NIRSpec	NIRSpec Bright Object Time Series	(3) HD-110067
	13	Planet f - NIRISS	NIRISS Single-Object Slitless Spectroscopy	(3) HD-110067
	14	Planet f - NIRSpec	NIRSpec Bright Object Time Series	(3) HD-110067
TOI-178				
	15	Planet d - NIRISS	NIRISS Single-Object Slitless Spectroscopy	(4) TOI-178
	16	Planet g - NIRISS	NIRISS Single-Object Slitless Spectroscopy	(4) TOI-178

## **ABSTRACT**

Across the Galaxy, planetary systems play to a different tune than our own. Most Sun-like stars host compact ensembles of sub-Neptunes at distances shorter than Mercury. These systems are often locked in harmonious resonant chains at early ages but become dissonant over time, leading to the non-resonant multi-planet systems we observe today. Surviving resonant chains preserve the original rhythm of formation --- architectures frozen at disk dispersal and atmospheres saved from the disruptive improvisations of late-stage impacts. Sub-Neptunes in such chains are pristine laboratories to study how their interiors and atmospheres evolve with time.

IN/AT-SYNC (INterior/ATmosphere SurveY of sub-Neptunes in Chains) will use NIRISS/SOSS and NIRSpec/G395H to measure atmospheric mean molecular weights, C/O ratios, and envelope mass fractions for nine sub-Neptunes in resonant chains orbiting Sun-like stars. Combined with existing JWST data, we will obtain a finely sampled age sequence (20 Myr–7 Gyr, spaced by 0.3dex in log age) to test how interior–atmosphere coupling evolves --- from early atmospheric mass-loss, to magma-ocean equilibrium and volatile exchange to long-term cooling. Focusing on resonant systems minimizes degeneracies that would otherwise obscure compositional trends.

The program will deliver the first comprehensive view of sub-Neptune evolution around Sun-like stars, linking interior physics, atmospheric chemistry, and dynamical history. Beyond exoplanet studies, IN/AT-SYNC will resonate across disciplines, from geochemistry to planet formation theory, and compose a benchmark score to interpret the most common planets in our Galaxy.

## **OBSERVING DESCRIPTION**

This program aims to obtain the transmission spectrum between 1-5 $\mu$ m (combining NIRISS/SOSS and NIRSpec/G395H) of 9 planets in 4 resonant chain systems spanning different ages which, combined with existing JWST data, will provide a legacy dataset to study the evolution of interior and atmosphere properties of sub-Neptunes. The planets and systems to be observed in this proposal are:

- TOI-6109 b and c
- TOI-1136 d and f
- HD 110067 b, d and f
- TOI-178 d and g

We use the online JWST ETC to compute exposure times that ensure the highest S/N in each instrument mode without surpassing 80% saturation.

The optimal configuration is the following:

- TOI-6109 bc: NIRISS/SOSS (SUBSTRIP256, NISRAPID, 5 groups/int) + NIRSPEC/G395H (SUB2048, NRSRAPID, 35 groups per integration)

## JWST Proposal 10047 (Created: Friday, March 13, 2026, 1:04:03PM Eastern Standard Time) - Overview

- TOI-1136 df: NIRISS/SOSS (SUBSTRIP96, NISRAPID, 4 groups/int) + NIRSPEC/G395H (SUB2048, NRSRAPID, 11 groups per integration)
- HD 110067 bdf: NIRISS/SOSS (SUB204STRIPE\*, NISRAPID, 5 groups/int) + NIRSPEC/G395H (SUB2048, NRSRAPID, 3 groups per integration)

- TOI-178 dg: NIRISS/SOSS (SUBSTRIP256, NISRAPID, 4 groups/int). The NIRSPEC/G395H transits were obtained as part of program 2319.

(\*) We note that the NIRISS visits of the HD 110067 planets are making use of the new NIRISS/SOSS substripe mode, so we will be in contact with STScI to make sure of the reliability of the mode by the start of the observations.

For all targets, we will follow standard dwell time that accounts for detector settling, scheduling window, and the amplitude of transit-timing variations for each target. The visit duration and number of visits per instrument for each planet are the following:

- TOI-6109 b: visit\_dur=7.0h, 1 NIRISS + 1 NIRSpec
- TOI-6109 c: visit\_dur=7.6h, 1 NIRISS + 1 NIRSpec
- TOI-1136 d: visit\_dur=10.7h, 1 NIRISS + 1 NIRSpec
- TOI-1136 f: visit\_dur=12.9h, 1 NIRISS + 1 NIRSpec
- HD 110067 b: visit\_dur=8.7h, 1 NIRISS + 1 NIRSpec
- HD 110067 d: visit\_dur=10.1h, 1 NIRISS + 1 NIRSpec
- HD 110067 f: visit\_dur=12.8h, 1 NIRISS + 1 NIRSpec
- TOI-178 d: visit\_dur=7.2h, 1 NIRISS
- TOI-178 g: visit\_dur=6.8h, 1 NIRISS

The target acquisition will be done as follow:

- TOI-6109: NIRISS on target, NIRSpec on nearby star Gaia DR3 241035901114915712
- TOI-1136: NIRISS on target, NIRSpec on nearby star 2MASS 12484607+6451295
- HD 110067: NIRISS on target, NIRSpec on nearby star 2MASS 12392278+2000223
- TOI-178: NIRISS on target

The observations must coincide with planet transits. Uncertainties in the orbital ephemeris have a negligible impact on the scheduling for Cycle 5. Transit timing variations have been accounted for when relevant to calculate the transit windows and existing and ongoing follow-up from ground- and space-based facilities will allow us to update the phase constraints prior to Cycle 5.

## JWST Proposal 10047 (Created: Friday, March 13, 2026, 1:04:03PM Eastern Standard Time) - Overview

Given the resonant nature of the planetary systems, double transits (simultaneous or very close in time) are likely. With refined ephemeris from existing and ongoing follow-up we will update the scheduling constraints to exclude transit opportunities that may be affected by double transits or "contaminated" out-of-transit baselines by other planets in the system.

Finally, we do not link the NIRISS and NIRSpec visits to minimize the impact of stellar contamination (also known as transit light source effect or TLSE) as done for other programs (e.g., DD6543). The rotation period of the star is shorter or comparable in duration with the period of the planets, therefore the assumption that the heterogeneity distribution in the stellar surface may remain the same does not hold true in our case. However, all our targets are G- and K-dwarfs (not M stars) for which the TLSE is not a major hurdle on the interpretation of the transmission spectra (Rackham & de Wit, 2024).

# Proposal 10047 - Targets - IN/AT-SYNC: Interior/ATmosphere SurveY of sub-Neptunes in Chains

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TOI-6109	RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000	Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p>Category=Star Description=[Exoplanet Systems, G stars] Extended=NO</p>				
(2)	TOI-1136	RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000	Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p>Category=Star Description=[Exoplanet Systems, G stars] Extended=NO</p>				
(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p>Category=Star Description=[Exoplanet Systems, K stars] Extended=NO</p>				
(4)	TOI-178	RA: 00 29 12.3029 (7.3012621d) Dec: -30 27 13.47 (-30.45374d) Equinox: J2000	Proper Motion RA: 150.032 mas/yr Proper Motion Dec: -87.13200002148369 mas/yr Parallax: 0.0159" Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p>Category=Star Description=[Exoplanet Systems, K stars] Extended=NO</p>				
(5)	acq_TOI-6109	RA: 03 20 32.5522 (50.1356342d) Dec: +42 36 43.06 (42.61196d) Equinox: J2000	Proper Motion RA: 0.1819 mas/yr Proper Motion Dec: -1.2814 mas/yr Epoch of Position: 2016	
<p><i>Comments: This object was generated by the targetselector and retrieved from the 2MASS database.</i></p> <p>Category=Star Description=[K dwarfs] Extended=NO</p>				

Fixed Targets

## Proposal 10047 - Targets - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

(6)	acq_TOI-1136	RA: 12 48 46.0740 (192.1919750d) Dec: +64 51 29.57 (64.85821d) Equinox: J2000	Proper Motion RA: -10.8729 mas/yr Proper Motion Dec: -7.7044 mas/yr Epoch of Position: 2016.0
<p><i>Comments: This object was generated by the targetselector and retrieved from the 2MASS database.</i>            Category=Star            Description=[K dwarfs]            Extended=NO</p>			
(7)	acq_HD110067	RA: 12 39 22.7837 (189.8449321d) Dec: +20 00 22.37 (20.00621d) Equinox: J2000	Proper Motion RA: -8.7384 mas/yr Proper Motion Dec: -25.4646 mas/yr Epoch of Position: 2016
<p><i>Comments: This object was generated by the targetselector and retrieved from the 2MASS database.</i>            Category=Star            Description=[M dwarfs]            Extended=NO</p>			

Proposal 10047 - Observation 1 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 1: Planet b - NIRISS</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRISS Single-Object Slitless Spectroscopy</p>																													
	<p>(Planet b - NIRISS (Obs 1)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet b - NIRISS (Obs 1)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																													
<b>Diagnostics</b>																														
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>TOI-6109</td> <td>RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000</td> <td>Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000</td> <td></td> </tr> </tbody> </table>	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous	(1)	TOI-6109	RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000	Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000		<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, G stars]</i> <i>Extended=NO</i></p>																		
	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous																									
(1)	TOI-6109	RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000	Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000																											
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Acquisition Mode</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1 TOI-6109</td> <td>SOSSFAINT</td> <td>F480M</td> <td>NIS</td> <td>11</td> <td>1</td> <td>1</td> <td>2.068</td> <td></td> </tr> </tbody> </table>	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	1 TOI-6109	SOSSFAINT	F480M	NIS	11	1	1	2.068										
	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																				
1	1 TOI-6109	SOSSFAINT	F480M	NIS	11	1	1	2.068																						
<b>Template</b>	Subarray					Include Short First Exposure and F277W Exposure?																								
	SUBSTRIP256					false																								
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NISRAPID</td> <td>5</td> <td>764</td> <td>1</td> <td>1</td> <td>764</td> <td>25200.143</td> <td></td> </tr> </tbody> </table>	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	NISRAPID	5	764	1	1	764	25200.143												
	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																					
1	NISRAPID	5	764	1	1	764	25200.143																							

## Proposal 10047 - Observation 1 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

### Special Requirements

Phase 0.9707112960907547 to 0.978033472068066 with period 5.690476 Days and zero-phase 2458791.0538 HJD  
Aperture PA Range 67 to 84 Degrees (V3 66.43873283 to 83.43873283)  
Aperture PA Range 231 to 240 Degrees (V3 230.43873283 to 239.43873283)  
Aperture PA Range 257 to 261 Degrees (V3 256.43873283 to 260.43873283)  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 2 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 2: Planet b - NIRSpec</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRSpec Bright Object Time Series</p>																															
<b>Diagnostics</b>	<p>(Planet b - NIRSpec (Obs 2)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet b - NIRSpec (Obs 2)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>TOI-6109</td> <td>RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000</td> <td colspan="4"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, G stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous				(1)	TOI-6109	RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000	Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000							
#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																									
(1)	TOI-6109	RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000	Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>TA Method</th> <th>Subarray</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>5 acq_TOI-6109</td> <td>WATA</td> <td>SUB2048</td> <td>F110W</td> <td>NRSRAPID</td> <td>3</td> <td>1</td> <td>1</td> <td>3.628</td> <td></td> </tr> </tbody> </table>										#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	5 acq_TOI-6109	WATA	SUB2048	F110W	NRSRAPID	3	1	1	3.628	
#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	5 acq_TOI-6109	WATA	SUB2048	F110W	NRSRAPID	3	1	1	3.628																							
<b>Template</b>	<p>Subarray</p> <p>SUB2048</p>																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Grating/Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>G395H/F290LP</td> <td>NRSRAPID</td> <td>35</td> <td>775</td> <td>1</td> <td>1</td> <td>775</td> <td>25181.672</td> <td></td> </tr> </tbody> </table>										#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	G395H/F290LP	NRSRAPID	35	775	1	1	775	25181.672			
#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	G395H/F290LP	NRSRAPID	35	775	1	1	775	25181.672																								

Proposal 10047 - Observation 2 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9707112960907547 to 0.978033472068066 with period 5.690476 Days and zero-phase 2458791.0538 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 3 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 3: Planet c - NIRISS</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRISS Single-Object Slitless Spectroscopy</p>																															
	<p>(Planet c - NIRISS (Obs 3)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet c - NIRISS (Obs 3)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Diagnostics</b>																																
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>TOI-6109</td> <td>RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000</td> <td colspan="4"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, G stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous				(1)	TOI-6109	RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000	Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000							
	#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																								
(1)	TOI-6109	RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000	Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Acquisition Mode</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1 TOI-6109</td> <td>SOSSFAINT</td> <td>F480M</td> <td>NIS</td> <td>11</td> <td>1</td> <td>1</td> <td>2.068</td> <td></td> </tr> </tbody> </table>										#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	1 TOI-6109	SOSSFAINT	F480M	NIS	11	1	1	2.068			
	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	1 TOI-6109	SOSSFAINT	F480M	NIS	11	1	1	2.068																								
<b>Template</b>	<table border="1"> <thead> <tr> <th>Subarray</th> <th>Include Short First Exposure and F277W Exposure?</th> </tr> </thead> <tbody> <tr> <td>SUBSTRIP256</td> <td>false</td> </tr> </tbody> </table>										Subarray	Include Short First Exposure and F277W Exposure?	SUBSTRIP256	false																		
	Subarray	Include Short First Exposure and F277W Exposure?																														
SUBSTRIP256	false																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NISRAPID</td> <td>5</td> <td>829</td> <td>1</td> <td>1</td> <td>829</td> <td>27344.134</td> <td></td> </tr> </tbody> </table>										#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	NISRAPID	5	829	1	1	829	27344.134					
	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	NISRAPID	5	829	1	1	829	27344.134																									

## Proposal 10047 - Observation 3 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

### Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 8.538878 Days and zero-phase 2458798.0657 HJD  
Aperture PA Range 67 to 84 Degrees (V3 66.43873283 to 83.43873283)  
Aperture PA Range 231 to 240 Degrees (V3 230.43873283 to 239.43873283)  
Aperture PA Range 257 to 261 Degrees (V3 256.43873283 to 260.43873283)  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 4 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 4: Planet c - NIRSpec</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRSpec Bright Object Time Series</p>																															
<b>Diagnostics</b>	<p>(Planet c - NIRSpec (Obs 4)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet c - NIRSpec (Obs 4)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>TOI-6109</td> <td>RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000</td> <td>Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000</td> <td></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, G stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous	(1)	TOI-6109	RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000	Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000													
#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous																												
(1)	TOI-6109	RA: 03 20 31.6230 (50.1317625d) Dec: +42 36 25.49 (42.60708d) Equinox: J2000	Proper Motion RA: 27.015 mas/yr Proper Motion Dec: -28.61199993731134 mas/yr Parallax: 0.0067335" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>TA Method</th> <th>Subarray</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>5 acq_TOI-6109</td> <td>WATA</td> <td>SUB2048</td> <td>F110W</td> <td>NRSRAPID</td> <td>3</td> <td>1</td> <td>1</td> <td>3.628</td> <td></td> </tr> </tbody> </table>										#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	5 acq_TOI-6109	WATA	SUB2048	F110W	NRSRAPID	3	1	1	3.628	
#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	5 acq_TOI-6109	WATA	SUB2048	F110W	NRSRAPID	3	1	1	3.628																							
<b>Template</b>	<p>Subarray</p> <p>SUB2048</p>																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Grating/Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>G395H/F290LP</td> <td>NRSRAPID</td> <td>35</td> <td>842</td> <td>1</td> <td>1</td> <td>842</td> <td>27358.668</td> <td></td> </tr> </tbody> </table>										#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	G395H/F290LP	NRSRAPID	35	842	1	1	842	27358.668			
#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	G395H/F290LP	NRSRAPID	35	842	1	1	842	27358.668																								

Proposal 10047 - Observation 4 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 8.538878 Days and zero-phase 2458798.0657 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 5 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 5: Planet d - NIRISS</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRISS Single-Object Slitless Spectroscopy</p>																															
	<p>(Planet d - NIRISS (Obs 5)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet d - NIRISS (Obs 5)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Diagnostics</b>																																
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>TOI-1136</td> <td>RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000</td> <td colspan="4"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, G stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous				(2)	TOI-1136	RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000	Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000							
	#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																								
(2)	TOI-1136	RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000	Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Acquisition Mode</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2 TOI-1136</td> <td>SOSSFAINT</td> <td>F480M</td> <td>NISRAPID</td> <td>13</td> <td>1</td> <td>1</td> <td>0.657</td> <td></td> </tr> </tbody> </table>										#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	2 TOI-1136	SOSSFAINT	F480M	NISRAPID	13	1	1	0.657			
	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	2 TOI-1136	SOSSFAINT	F480M	NISRAPID	13	1	1	0.657																								
<b>Template</b>	<table border="1"> <thead> <tr> <th>Subarray</th> <th>Include Short First Exposure and F277W Exposure?</th> </tr> </thead> <tbody> <tr> <td>SUBSTRIP96</td> <td>false</td> </tr> </tbody> </table>										Subarray	Include Short First Exposure and F277W Exposure?	SUBSTRIP96	false																		
	Subarray	Include Short First Exposure and F277W Exposure?																														
SUBSTRIP96	false																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NISRAPID</td> <td>4</td> <td>3493</td> <td>1</td> <td>1</td> <td>3493</td> <td>38739.047</td> <td></td> </tr> </tbody> </table>										#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	NISRAPID	4	3493	1	1	3493	38739.047					
	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	NISRAPID	4	3493	1	1	3493	38739.047																									

## Proposal 10047 - Observation 5 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

### Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 12.5199 Days and zero-phase 2458686.0628 HJD  
Aperture PA Range 128 to 168 Degrees (V3 127.43873283 to 167.43873283)  
Aperture PA Range 174 to 310 Degrees (V3 173.43873283 to 309.43873283)  
Aperture PA Range 324 to 334 Degrees (V3 323.43873283 to 333.43873283)  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 6 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 6: Planet d - NIRSpec</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRSpec Bright Object Time Series</p>																															
<b>Diagnostics</b>	<p>(Planet d - NIRSpec (Obs 6)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet d - NIRSpec (Obs 6)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>TOI-1136</td> <td>RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000</td> <td>Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000</td> <td></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, G stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous	(2)	TOI-1136	RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000	Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000													
#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous																												
(2)	TOI-1136	RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000	Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>TA Method</th> <th>Subarray</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>6 acq_TOI-1136</td> <td>WATA</td> <td>SUB32</td> <td>CLEAR</td> <td>NRSRAPIDD6</td> <td>3</td> <td>1</td> <td>1</td> <td>0.26</td> <td></td> </tr> </tbody> </table>										#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	6 acq_TOI-1136	WATA	SUB32	CLEAR	NRSRAPIDD6	3	1	1	0.26	
#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	6 acq_TOI-1136	WATA	SUB32	CLEAR	NRSRAPIDD6	3	1	1	0.26																							
<b>Template</b>	<p>Subarray</p> <p>SUB2048</p>																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Grating/Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>G395H/F290LP</td> <td>NRSRAPID</td> <td>11</td> <td>3573</td> <td>1</td> <td>1</td> <td>3573</td> <td>38747.327</td> <td></td> </tr> </tbody> </table>										#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	G395H/F290LP	NRSRAPID	11	3573	1	1	3573	38747.327			
#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	G395H/F290LP	NRSRAPID	11	3573	1	1	3573	38747.327																								

Proposal 10047 - Observation 6 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 12.5199 Days and zero-phase 2458686.0628 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 7 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 7: Planet f - NIRISS</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRISS Single-Object Slitless Spectroscopy</p>																															
	<p>(Planet f - NIRISS (Obs 7)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet f - NIRISS (Obs 7)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Diagnostics</b>																																
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>TOI-1136</td> <td>RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000</td> <td colspan="4"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, G stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous				(2)	TOI-1136	RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000	Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000							
	#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																								
(2)	TOI-1136	RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000	Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Acquisition Mode</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2 TOI-1136</td> <td>SOSSFAINT</td> <td>F480M</td> <td>NISRAPID</td> <td>13</td> <td>1</td> <td>1</td> <td>0.657</td> <td></td> </tr> </tbody> </table>										#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	2 TOI-1136	SOSSFAINT	F480M	NISRAPID	13	1	1	0.657			
	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	2 TOI-1136	SOSSFAINT	F480M	NISRAPID	13	1	1	0.657																								
<b>Template</b>	<table border="1"> <thead> <tr> <th>Subarray</th> <th>Include Short First Exposure and F277W Exposure?</th> </tr> </thead> <tbody> <tr> <td>SUBSTRIP96</td> <td>false</td> </tr> </tbody> </table>										Subarray	Include Short First Exposure and F277W Exposure?	SUBSTRIP96	false																		
	Subarray	Include Short First Exposure and F277W Exposure?																														
SUBSTRIP96	false																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NISRAPID</td> <td>4</td> <td>4174</td> <td>1</td> <td>1</td> <td>4174</td> <td>46291.664</td> <td></td> </tr> </tbody> </table>										#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	NISRAPID	4	4174	1	1	4174	46291.664					
	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	NISRAPID	4	4174	1	1	4174	46291.664																									

## Proposal 10047 - Observation 7 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

### Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 26.321 Days and zero-phase 2458699.3777 HJD  
Aperture PA Range 128 to 168 Degrees (V3 127.43873283 to 167.43873283)  
Aperture PA Range 174 to 310 Degrees (V3 173.43873283 to 309.43873283)  
Aperture PA Range 324 to 334 Degrees (V3 323.43873283 to 333.43873283)  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 8 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 8: Planet f - NIRSpec</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRSpec Bright Object Time Series</p>																															
<b>Diagnostics</b>	<p>(Planet f - NIRSpec (Obs 8)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet f - NIRSpec (Obs 8)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>TOI-1136</td> <td>RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000</td> <td>Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000</td> <td></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, G stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous	(2)	TOI-1136	RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000	Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000													
#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous																												
(2)	TOI-1136	RA: 12 48 44.3726 (192.1848858d) Dec: +64 51 19.15 (64.85532d) Equinox: J2000	Proper Motion RA: 1.216 mas/yr Proper Motion Dec: -10.045000044556218 mas/yr Parallax: 0.0118236" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>TA Method</th> <th>Subarray</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>6 acq_TOI-1136</td> <td>WATA</td> <td>SUB32</td> <td>CLEAR</td> <td>NRSRAPIDD6</td> <td>3</td> <td>1</td> <td>1</td> <td>0.26</td> <td></td> </tr> </tbody> </table>										#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	6 acq_TOI-1136	WATA	SUB32	CLEAR	NRSRAPIDD6	3	1	1	0.26	
#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	6 acq_TOI-1136	WATA	SUB32	CLEAR	NRSRAPIDD6	3	1	1	0.26																							
<b>Template</b>	<p>Subarray</p> <p>SUB2048</p>																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Grating/Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>G395H/F290LP</td> <td>NRSRAPID</td> <td>11</td> <td>4271</td> <td>1</td> <td>1</td> <td>4271</td> <td>46316.774</td> <td></td> </tr> </tbody> </table>										#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	G395H/F290LP	NRSRAPID	11	4271	1	1	4271	46316.774			
#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	G395H/F290LP	NRSRAPID	11	4271	1	1	4271	46316.774																								

Proposal 10047 - Observation 8 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 26.321 Days and zero-phase 2458699.3777 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 9 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 9: Planet b - NIRISS</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRISS Single-Object Slitless Spectroscopy</p>																															
	<p>(Planet b - NIRISS (Obs 9)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet b - NIRISS (Obs 9)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Planet b - NIRISS (Obs 9)) Warning (Form): The slew between the acquisition exposure and the farthest science exposure is 61.790 Arcsec (larger than the recommended limit of 45.000 Arcsec) and may result in reduced or no schedulability. See more information in the diagnostic browser.</p> <p>(Visit 9:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Diagnostics</b>																																
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>HD-110067</td> <td>RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000</td> <td colspan="4"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous				(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000							
	#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																								
(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Acquisition Mode</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3 HD-110067</td> <td>SOSSFAINT</td> <td>F480M</td> <td>NISRAPID</td> <td>3</td> <td>1</td> <td>1</td> <td>0.202</td> <td></td> </tr> </tbody> </table>										#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	3 HD-110067	SOSSFAINT	F480M	NISRAPID	3	1	1	0.202			
	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	3 HD-110067	SOSSFAINT	F480M	NISRAPID	3	1	1	0.202																								
<b>Template</b>	<table border="1"> <thead> <tr> <th>Subarray</th> <th>Include Short First Exposure and F277W Exposure?</th> </tr> </thead> <tbody> <tr> <td>SUB204STRIPE_SOSS</td> <td>false</td> </tr> </tbody> </table>										Subarray	Include Short First Exposure and F277W Exposure?	SUB204STRIPE_SOSS	false																		
	Subarray	Include Short First Exposure and F277W Exposure?																														
SUB204STRIPE_SOSS	false																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NISRAPID</td> <td>5</td> <td>920</td> <td>1</td> <td>1</td> <td>920</td> <td>31254.976</td> <td></td> </tr> </tbody> </table>										#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	NISRAPID	5	920	1	1	920	31254.976					
	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	NISRAPID	5	920	1	1	920	31254.976																									

Proposal 10047 - Observation 9 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 9.113678 Days and zero-phase 2459640.15797 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 10 - IN/AT-SYNC: INTERior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 10: Planet b - NIRSpec</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRSpec Bright Object Time Series</p>																																
<b>Diagnostics</b>	<p>(Planet b - NIRSpec (Obs 10)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet b - NIRSpec (Obs 10)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Planet b - NIRSpec (Obs 10)) Warning (Form): The slew between the acquisition exposure and the farthest science exposure is 77.800 Arcsec (larger than the recommended limit of 45.000 Arcsec) and may result in reduced or no schedulability. See more information in the diagnostic browser.</p> <p>(Visit 10:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																																
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>HD-110067</td> <td>RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000</td> <td>Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000</td> <td></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p>											#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous	(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000													
#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous																													
(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000																														
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>TA Method</th> <th>Subarray</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>7 acq_HD110067</td> <td>WATA</td> <td>SUB32</td> <td>F110W</td> <td>NRSRAPIDD6</td> <td>3</td> <td>1</td> <td>1</td> <td>0.26</td> <td></td> </tr> </tbody> </table>											#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	7 acq_HD110067	WATA	SUB32	F110W	NRSRAPIDD6	3	1	1	0.26	
#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	7 acq_HD110067	WATA	SUB32	F110W	NRSRAPIDD6	3	1	1	0.26																								
<b>Template</b>	<p>Subarray</p> <p>SUB2048</p>																																
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Grating/Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>G395H/F290LP</td> <td>NRSRAPID</td> <td>3</td> <td>8608</td> <td>1</td> <td>1</td> <td>8608</td> <td>31233.956</td> <td></td> </tr> </tbody> </table>											#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	G395H/F290LP	NRSRAPID	3	8608	1	1	8608	31233.956			
#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																								
1	G395H/F290LP	NRSRAPID	3	8608	1	1	8608	31233.956																									

Proposal 10047 - Observation 10 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 9.113678 Days and zero-phase 2459640.15797 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 11 - IN/AT-SYNC: INTERior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 11: Planet d - NIRISS</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRISS Single-Object Slitless Spectroscopy</p>																													
	<p>(Planet d - NIRISS (Obs 11)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet d - NIRISS (Obs 11)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Planet d - NIRISS (Obs 11)) Warning (Form): The slew between the acquisition exposure and the farthest science exposure is 61.790 Arcsec (larger than the recommended limit of 45.000 Arcsec) and may result in reduced or no schedulability. See more information in the diagnostic browser.</p> <p>(Visit 11:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																													
<b>Diagnostics</b>																														
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="3">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>HD-110067</td> <td>RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000</td> <td colspan="3"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous			(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000						
	#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																						
(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000																											
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Acquisition Mode</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3 HD-110067</td> <td>SOSSFAINT</td> <td>F480M</td> <td>NISRAPID</td> <td>3</td> <td>1</td> <td>1</td> <td>0.202</td> <td></td> </tr> </tbody> </table>										#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	3 HD-110067	SOSSFAINT	F480M	NISRAPID	3	1	1	0.202	
	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																				
1	3 HD-110067	SOSSFAINT	F480M	NISRAPID	3	1	1	0.202																						
<b>Template</b>	<table border="1"> <thead> <tr> <th>Subarray</th> <th>Include Short First Exposure and F277W Exposure?</th> </tr> </thead> <tbody> <tr> <td>SUB204STRIPE_SOSS</td> <td>false</td> </tr> </tbody> </table>										Subarray	Include Short First Exposure and F277W Exposure?	SUB204STRIPE_SOSS	false																
	Subarray	Include Short First Exposure and F277W Exposure?																												
SUB204STRIPE_SOSS	false																													
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NISRAPID</td> <td>5</td> <td>1072</td> <td>1</td> <td>1</td> <td>1072</td> <td>36418.842</td> <td></td> </tr> </tbody> </table>										#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	NISRAPID	5	1072	1	1	1072	36418.842			
	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																					
1	NISRAPID	5	1072	1	1	1072	36418.842																							

Proposal 10047 - Observation 11 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 20.519617 Days and zero-phase 2459708.20282 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 12 - IN/AT-SYNC: INTERior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 12: Planet d - NIRSpec</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRSpec Bright Object Time Series</p>																															
<b>Diagnostics</b>	<p>(Planet d - NIRSpec (Obs 12)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet d - NIRSpec (Obs 12)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Planet d - NIRSpec (Obs 12)) Warning (Form): The slew between the acquisition exposure and the farthest science exposure is 77.800 Arcsec (larger than the recommended limit of 45.000 Arcsec) and may result in reduced or no schedulability. See more information in the diagnostic browser.</p> <p>(Visit 12:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="3">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>HD-110067</td> <td>RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000</td> <td>Proper Motion RA: -81.703 mas/yr</td> <td>Proper Motion Dec: -104.53199997755291 mas/yr</td> <td>Parallax: 0.0310369"</td> <td>Epoch of Position: 2000</td> <td colspan="4"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections			Miscellaneous				(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr	Proper Motion Dec: -104.53199997755291 mas/yr	Parallax: 0.0310369"	Epoch of Position: 2000					
#	Name	Target Coordinates	Targ. Coord. Corrections			Miscellaneous																										
(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr	Proper Motion Dec: -104.53199997755291 mas/yr	Parallax: 0.0310369"	Epoch of Position: 2000																										
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>TA Method</th> <th>Subarray</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>7 acq_HD110067</td> <td>WATA</td> <td>SUB32</td> <td>F110W</td> <td>NRSRAPIDD6</td> <td>3</td> <td>1</td> <td>1</td> <td>0.26</td> <td></td> </tr> </tbody> </table>										#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	7 acq_HD110067	WATA	SUB32	F110W	NRSRAPIDD6	3	1	1	0.26	
#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	7 acq_HD110067	WATA	SUB32	F110W	NRSRAPIDD6	3	1	1	0.26																							
<b>Template</b>	<p>Subarray</p> <p>SUB2048</p>																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Grating/Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>G395H/F290LP</td> <td>NRSRAPID</td> <td>3</td> <td>10036</td> <td>1</td> <td>1</td> <td>10036</td> <td>36415.425</td> <td></td> </tr> </tbody> </table>										#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	G395H/F290LP	NRSRAPID	3	10036	1	1	10036	36415.425			
#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	G395H/F290LP	NRSRAPID	3	10036	1	1	10036	36415.425																								

Proposal 10047 - Observation 12 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 20.519617 Days and zero-phase 2459708.20282 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 13 - IN/AT-SYNC: INTERior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 13: Planet f - NIRISS</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRISS Single-Object Slitless Spectroscopy</p>																																							
	<p>(Planet f - NIRISS (Obs 13)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet f - NIRISS (Obs 13)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Planet f - NIRISS (Obs 13)) Warning (Form): The slew between the acquisition exposure and the farthest science exposure is 61.790 Arcsec (larger than the recommended limit of 45.000 Arcsec) and may result in reduced or no schedulability. See more information in the diagnostic browser.</p> <p>(Visit 13:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																																							
<b>Diagnostics</b>																																								
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="3">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>HD-110067</td> <td>RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000</td> <td colspan="3"></td> </tr> <tr> <td colspan="10"> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p> </td> </tr> </tbody> </table>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous			(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000							<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p>									
	#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																																
(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000																																					
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p>																																								
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Acquisition Mode</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3 HD-110067</td> <td>SOSSFAINT</td> <td>F480M</td> <td>NISRAPID</td> <td>3</td> <td>1</td> <td>1</td> <td>0.202</td> <td></td> </tr> </tbody> </table>										#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	3 HD-110067	SOSSFAINT	F480M	NISRAPID	3	1	1	0.202											
	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																														
1	3 HD-110067	SOSSFAINT	F480M	NISRAPID	3	1	1	0.202																																
<b>Template</b>	<table border="1"> <thead> <tr> <th>Subarray</th> <th>Include Short First Exposure and F277W Exposure?</th> </tr> </thead> <tbody> <tr> <td>SUB204STRIPE_SOSS</td> <td>false</td> </tr> </tbody> </table>										Subarray	Include Short First Exposure and F277W Exposure?	SUB204STRIPE_SOSS	false																										
	Subarray	Include Short First Exposure and F277W Exposure?																																						
SUB204STRIPE_SOSS	false																																							
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NISRAPID</td> <td>5</td> <td>1358</td> <td>1</td> <td>1</td> <td>1358</td> <td>46135.062</td> <td></td> </tr> </tbody> </table>										#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	NISRAPID	5	1358	1	1	1358	46135.062													
	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																															
1	NISRAPID	5	1358	1	1	1358	46135.062																																	

Proposal 10047 - Observation 13 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 41.05854 Days and zero-phase 2459641.5763 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 14 - IN/AT-SYNC: INTERior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 14: Planet f - NIRSpec</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRSpec Bright Object Time Series</p>																															
	<p>(Planet f - NIRSpec (Obs 14)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet f - NIRSpec (Obs 14)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Planet f - NIRSpec (Obs 14)) Warning (Form): The slew between the acquisition exposure and the farthest science exposure is 77.800 Arcsec (larger than the recommended limit of 45.000 Arcsec) and may result in reduced or no schedulability. See more information in the diagnostic browser.</p> <p>(Visit 14:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																															
<b>Diagnostics</b>																																
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>HD-110067</td> <td>RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000</td> <td colspan="4"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous				(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000							
	#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																								
(3)	HD-110067	RA: 12 39 21.5037 (189.8395988d) Dec: +20 01 40.04 (20.02779d) Equinox: J2000	Proper Motion RA: -81.703 mas/yr Proper Motion Dec: -104.53199997755291 mas/yr Parallax: 0.0310369" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>TA Method</th> <th>Subarray</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>7 acq_HD110067</td> <td>WATA</td> <td>SUB32</td> <td>F110W</td> <td>NRSRAPIDD6</td> <td>3</td> <td>1</td> <td>1</td> <td>0.26</td> <td></td> </tr> </tbody> </table>										#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	7 acq_HD110067	WATA	SUB32	F110W	NRSRAPIDD6	3	1	1	0.26	
	#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																					
1	7 acq_HD110067	WATA	SUB32	F110W	NRSRAPIDD6	3	1	1	0.26																							
<b>Template</b>	Subarray																															
	SUB2048																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Grating/Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>G395H/F290LP</td> <td>NRSRAPID</td> <td>3</td> <td>12714</td> <td>1</td> <td>1</td> <td>12714</td> <td>46132.495</td> <td></td> </tr> </tbody> </table>										#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	G395H/F290LP	NRSRAPID	3	12714	1	1	12714	46132.495			
	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	G395H/F290LP	NRSRAPID	3	12714	1	1	12714	46132.495																								

Proposal 10047 - Observation 14 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 41.05854 Days and zero-phase 2459641.5763 HJD  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 15 - IN/AT-SYNC: INTERior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 15: Planet d - NIRISS</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRISS Single-Object Slitless Spectroscopy</p>																															
	<p>(Planet d - NIRISS (Obs 15)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet d - NIRISS (Obs 15)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 15:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Visit 15:1) Informational (Form): Visit schedulable, but most scheduling windows are when JWST is pointed in direction of greatest micrometeoroid impact risk. This is likely due to scheduling special requirements.</p>																															
<b>Diagnostics</b>																																
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(4)</td> <td>TOI-178</td> <td>RA: 00 29 12.3029 (7.3012621d) Dec: -30 27 13.47 (-30.45374d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: 150.032 mas/yr Proper Motion Dec: -87.13200002148369 mas/yr Parallax: 0.0159" Epoch of Position: 2000</td> <td colspan="4"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous				(4)	TOI-178	RA: 00 29 12.3029 (7.3012621d) Dec: -30 27 13.47 (-30.45374d) Equinox: J2000	Proper Motion RA: 150.032 mas/yr Proper Motion Dec: -87.13200002148369 mas/yr Parallax: 0.0159" Epoch of Position: 2000							
	#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																								
(4)	TOI-178	RA: 00 29 12.3029 (7.3012621d) Dec: -30 27 13.47 (-30.45374d) Equinox: J2000	Proper Motion RA: 150.032 mas/yr Proper Motion Dec: -87.13200002148369 mas/yr Parallax: 0.0159" Epoch of Position: 2000																													
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Acquisition Mode</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4 TOI-178</td> <td>SOSSFAINT</td> <td>F480M</td> <td>NIS</td> <td>5</td> <td>1</td> <td>1</td> <td>0.976</td> <td></td> </tr> </tbody> </table>										#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	4 TOI-178	SOSSFAINT	F480M	NIS	5	1	1	0.976			
	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																						
1	4 TOI-178	SOSSFAINT	F480M	NIS	5	1	1	0.976																								
<b>Template</b>	<table border="1"> <thead> <tr> <th>Subarray</th> <th>Include Short First Exposure and F277W Exposure?</th> </tr> </thead> <tbody> <tr> <td>SUBSTRIP256</td> <td>false</td> </tr> </tbody> </table>										Subarray	Include Short First Exposure and F277W Exposure?	SUBSTRIP256	false																		
	Subarray	Include Short First Exposure and F277W Exposure?																														
SUBSTRIP256	false																															
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NISRAPID</td> <td>4</td> <td>940</td> <td>1</td> <td>1</td> <td>940</td> <td>25841.051</td> <td></td> </tr> </tbody> </table>										#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	NISRAPID	4	940	1	1	940	25841.051					
	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																							
1	NISRAPID	4	940	1	1	940	25841.051																									

## Proposal 10047 - Observation 15 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

### Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 6.5577 Days and zero-phase 2458747.14623 HJD  
Aperture PA Range 18 to 34 Degrees (V3 17.43873283 to 33.43873283)  
Aperture PA Range 62 to 71 Degrees (V3 61.43873283 to 70.43873283)  
Aperture PA Range 243 to 280 Degrees (V3 242.43873283 to 279.43873283)  
Time Series Observation  
No Parallel Attachments

Proposal 10047 - Observation 16 - IN/AT-SYNC: INTERior/ATmosphere SurveY of sub-Neptunes in Chains

Fri Mar 13 18:04:03 GMT 2026

<b>Observation</b>	<p><b>Proposal 10047, Observation 16: Planet g - NIRISS</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRISS Single-Object Slitless Spectroscopy</p>																													
	<p>(Planet g - NIRISS (Obs 16)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.</p> <p>(Planet g - NIRISS (Obs 16)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.</p> <p>(Visit 16:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Visit 16:1) Informational (Form): Visit schedulable, but most scheduling windows are when JWST is pointed in direction of greatest micrometeoroid impact risk. This is likely due to scheduling special requirements.</p>																													
<b>Diagnostics</b>																														
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="3">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(4)</td> <td>TOI-178</td> <td>RA: 00 29 12.3029 (7.3012621d) Dec: -30 27 13.47 (-30.45374d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: 150.032 mas/yr Proper Motion Dec: -87.13200002148369 mas/yr Parallax: 0.0159" Epoch of Position: 2000</td> <td colspan="3"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>Category=Star</i> <i>Description=[Exoplanet Systems, K stars]</i> <i>Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous			(4)	TOI-178	RA: 00 29 12.3029 (7.3012621d) Dec: -30 27 13.47 (-30.45374d) Equinox: J2000	Proper Motion RA: 150.032 mas/yr Proper Motion Dec: -87.13200002148369 mas/yr Parallax: 0.0159" Epoch of Position: 2000						
	#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																						
(4)	TOI-178	RA: 00 29 12.3029 (7.3012621d) Dec: -30 27 13.47 (-30.45374d) Equinox: J2000	Proper Motion RA: 150.032 mas/yr Proper Motion Dec: -87.13200002148369 mas/yr Parallax: 0.0159" Epoch of Position: 2000																											
<b>Acquisition</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Acquisition Mode</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4 TOI-178</td> <td>SOSSFAINT</td> <td>F480M</td> <td>NIS</td> <td>5</td> <td>1</td> <td>1</td> <td>0.976</td> <td></td> </tr> </tbody> </table>										#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	1	4 TOI-178	SOSSFAINT	F480M	NIS	5	1	1	0.976	
	#	Target	Acquisition Mode	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID																				
1	4 TOI-178	SOSSFAINT	F480M	NIS	5	1	1	0.976																						
<b>Template</b>	<table border="1"> <thead> <tr> <th>Subarray</th> <th>Include Short First Exposure and F277W Exposure?</th> </tr> </thead> <tbody> <tr> <td>SUBSTRIP256</td> <td>false</td> </tr> </tbody> </table>										Subarray	Include Short First Exposure and F277W Exposure?	SUBSTRIP256	false																
	Subarray	Include Short First Exposure and F277W Exposure?																												
SUBSTRIP256	false																													
<b>Spectral Elements</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NISRAPID</td> <td>4</td> <td>895</td> <td>1</td> <td>1</td> <td>895</td> <td>24603.98</td> <td></td> </tr> </tbody> </table>										#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	NISRAPID	4	895	1	1	895	24603.98			
	#	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																					
1	NISRAPID	4	895	1	1	895	24603.98																							

Proposal 10047 - Observation 16 - IN/AT-SYNC: INterior/ATmosphere SurveY of sub-Neptunes in Chains

Special Requirements

Phase 0.9790175399312806 to 0.983897181807727 with period 20.7095 Days and zero-phase 2458748.0302 HJD  
Aperture PA Range 18 to 34 Degrees (V3 17.43873283 to 33.43873283)  
Aperture PA Range 62 to 71 Degrees (V3 61.43873283 to 70.43873283)  
Aperture PA Range 243 to 280 Degrees (V3 242.43873283 to 279.43873283)  
Time Series Observation  
No Parallel Attachments