

# Introduction to APT for JWST

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## - **APT overview**

- JWST planning in APT
- APT templates
- Scheduling and smart accounting
- Auxiliary tools

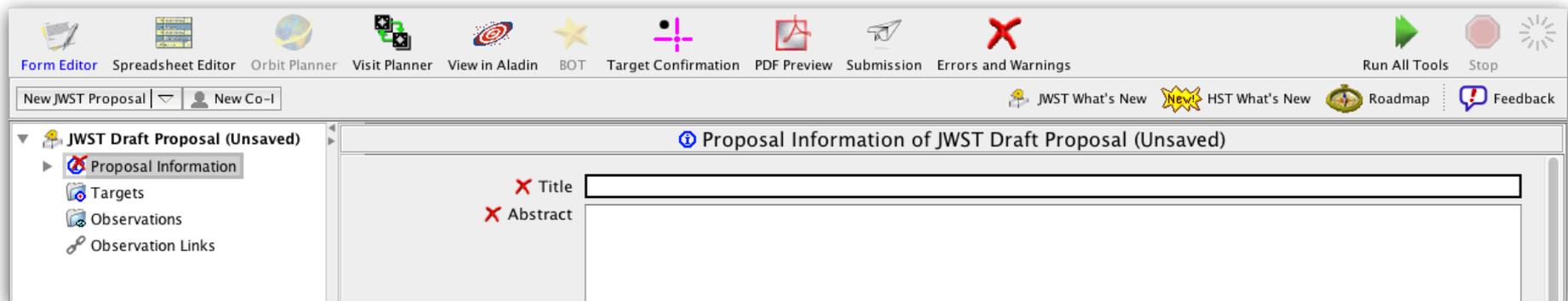
## - **Starting a proposal in APT**

- The APT GUI
- APT usage basics

## - **Instrument-specific examples**

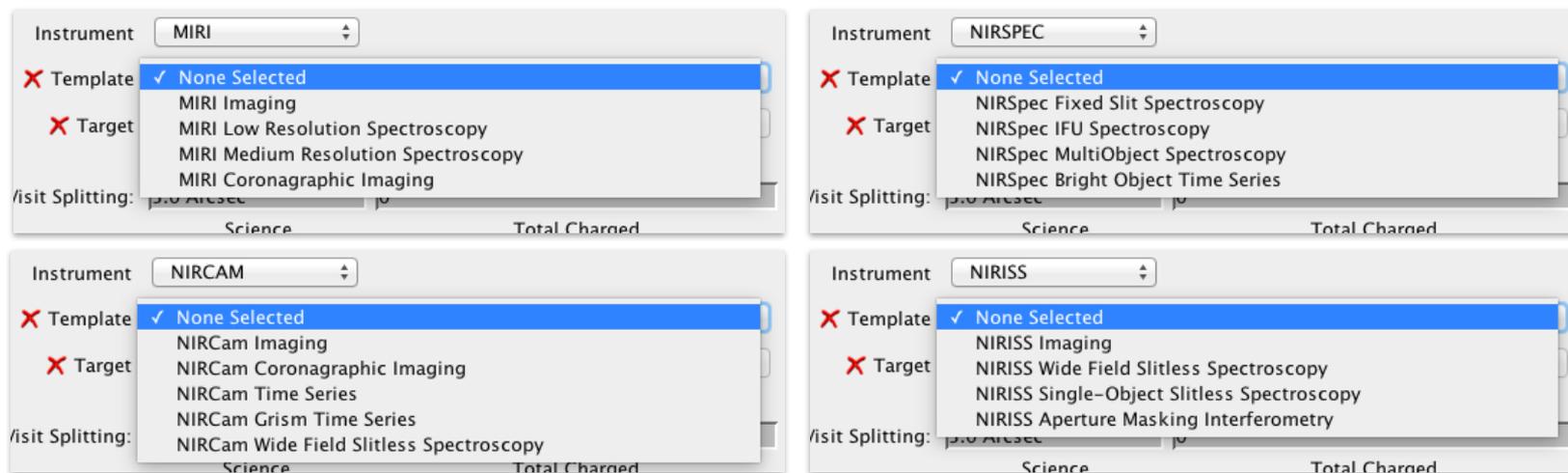
- NIRSpec IFS (Tim Rawle)
- MIRI imaging (Maca Garcia Marin)
- NIRCam mosaic imaging (Massimo Roberto)
  
- NIRSpec MOS planning with MPT - see Giovanna's MPT talk later

- The **Astronomer's Proposal Tool** (APT) allows users to construct, validate and submit proposals for both HST and JWST
- Many of the higher level functions and characteristics of APT are common to both branches of the tool, and will be familiar to those who have previously submitted HST proposals
  - Look and feel of the user interface; entry of investigators; definition of targets; use of Aladin for visualisation; ...



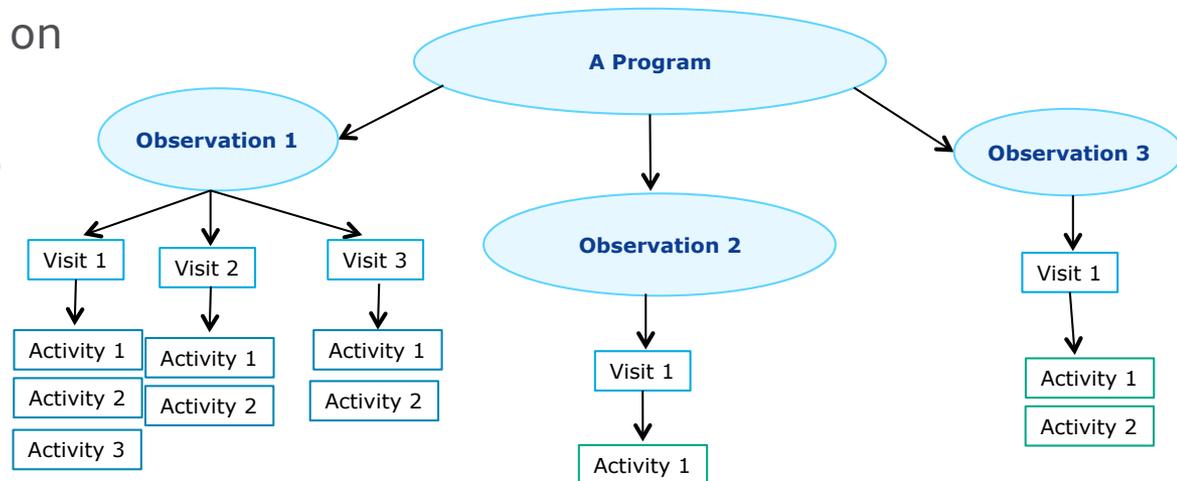
- However, the two missions have key differences which force APT to treat their proposals differently

- **Observations** are entered into APT using **templates**
  - Each observing mode of each instrument has a specific template
  - Allows user to adjust all the relevant parameters
  - Hides any parameters that are not needed for that mode



- (Some) templates can be combined to allow parallel observations
  - 1) MIRI imaging / NIRCcam imaging
  - 2) NIRCcam imaging / NIRISS WFSS
  - 3) MIRI imaging / NIRISS WFSS
  - 4) NIRSpec MOS / NIRCcam imaging (NIRSpec must be prime)
  - 5) NIRCcam imaging / NIRISS imaging (NIRCcam must be prime)

- A program can contain several different **Observations**
- Each Observation can have one or more **Visits** (e.g. tiles of a mosaic)
- Each Visit contains one or more **Exposures** that can be obtained using a single **Guide Star**
  - If a new guide star is needed, then a new visit is created
  - A visit lasting more than 2 hours is split
- One visit can contain different activities
  - Each activity is “invoked” by a script
  - For instance, Target Acquisition is one activity, a set of dithered exposures in a single filter is another activity etc
- Users **do not** have control on how the visits are split
- Exposure time is limited to 10000s (except special cases: e.g. time series)
- Data volume also limited (APT gives warnings)



- JWST schedules are based on the actual time required... not discrete viewing periods (e.g. HST orbits)
- JWST scheduling is **event driven**. User simply specifies the amount of time needed for their science
  - APT validates schedulability
  - APT calculates total science time and overheads
- The basic scheduling unit for planning are **visits**
  - APT automatically determines when to break the user-defined **observations** into multiple visits
  - Visits are not necessarily executed consecutively, but interleaved with activities from other programs in an optimised integrated timeline
  - Visits can be “linked” (either by the user, or in specific cases such as mosaics) to ensure that they do run back-to-back
  - User runs “**smart accounting**” prior to submission to update and optimise the overheads calculation based on the visits
- **APT Visit Planner** checks target visibility, guide star availability and any special requirements and gives feedback (warnings / errors) to the user prior to submission

- **Exposure Time Calculator (ETC)** is the primary tool users will need to calculate exposure specifications needed in APT
- Marco introduced ETC immediately prior to this presentation...
- No automatic transfer of values between APT / ETC (until at least Cycle 2)
- Preliminary planning in APT is recommended before finalising ETC calculations
  - ETC calculates at the “exposure level”; if APT observations includes dithers, need to use all exposures expected in ETC
  
- **MSA Planning Tool (MPT)** is the auxiliary tool for planning MSA configurations required for NIRSpec MOS observations
- Giovanna will introduce MPT after the next break
- MPT is loaded from, and automatically interfaces with, APT

- APT does not give an overview of a target's visibility over time, or the availability of specific position angles
- For quick-look or pre-planning, stand-alone **target visibility tool** (TVT) provide
  - Visibility windows
  - Available position angles as a function of time
- Basic command line (python) tool distributed as part of STSci *AstroConda*
- Example usage:
  - After a ToO trigger, is the target visible to JWST now and how long can the monitoring last?
  - Scheduling possibilities for NIRCcam pre-imaging and NIRSpec MOS
  - Feasibility of coronagraphic or long-slit observations that require specific angles and/or angular offsets
  - When planning a large mosaic, what position angles are possible?
- Marco introduced TVT immediately prior to this presentation...

**Pointing Verification Image**

Filter: F110W

PV Readout Pattern: NRSRAPID | PV No. of Groups: 1 | PV No. of Integrations: 1 | PV Photon Collect Duration: 10.737 | PV Total Photon Collect Duration: 10.737

Pointing Verification MSA Configuration: ALLCLOSED

**Science Parameters**

Dither Type: CYCLING | Size: MEDIUM | Starting Point: 1 | Number of Points: 4

#	Grating/Filter	Readout Pattern	No. of Groups	No. of Integrations	Leakcal	Dither	Autocal	Photon Collect ...	Total Photon C...
1	G140H/F100LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
2	G140H/F100LP	NRSIRS2RAPID	15	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NONE	218.833	218.833
3	G235H/F170LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
4	G235H/F170LP	NRSIRS2RAPID	15	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NONE	218.833	218.833
5	G395H/F290LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
6	G395H/F290LP	NRSIRS2RAPID	15	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NONE	218.833	218.833

Buttons: Add, Duplicate, Insert Above, Remove

Buttons: Edit Arp220, New, Edit Visit 1:1

Observa...	Number	Status	Label	Science	Total Char...	Parallel Slo...	Instrument	Template	Coordinate...	Coordinate...	Target	Number of ...	Splitting Di...	Comments
Nucleus_N...	1	UNKNOWN	Nucleus_N...	3285	5662		NIRSPEC	NIRSpec IF...			1 IC-4553	1	40.0 Arcsec	
Offset_NIR...	2	UNKNOWN	Offset_NIR...	3285	5662		NIRSPEC	NIRSpec IF...			2 IC-455...	1	40.0 Arcsec	
Nucleus_...	3	UNKNOWN	Nucleus_...	1668	4142		MIRI	MIRI Medi...			1 IC-4553	1	40.0 Arcsec	
Backgroun...	4	UNKNOWN	Backgroun...	417	3883		MIRI	MIRI Medi...			3 ARP220...	1	40.0 Arcsec	

Show: Observation

✓ No errors & warnings (Click for Details)

Download APT (current version 25.0.3):

[apt.stsci.edu](http://apt.stsci.edu)

Help desk:

[jwsthelph.stsci.edu](http://jwsthelph.stsci.edu)

## Top tool bar

Tree editor

The screenshot shows the APT GUI interface. At the top is a tool bar with icons for Form Editor, Spreadsheet Editor, Orbit Planner, Visit Planner, View in Aladin, ROT, Target Confirmation, PDF Preview, Submission, Errors and Warnings, Run All Tools, and Stop. Below the tool bar is a tree editor on the left showing a hierarchy of observation elements: JWST Draft Proposal (APT\_Arp220.aptx) > Proposal Information > Targets > Fixed Targets > 1 IC-4553, 2 IC-4553OFFSET, 3 ARP220BACKGROUND > Observations > Arp220 > Nucleus\_NIRSpec (Obs 1), Visit 1:1, Offset\_NIRSpec (Obs 2), Visit 2:1, Nucleus\_MIRI (Obs 3), Visit 3:1, Background\_MIRI (Obs 4), Visit 4:1, and Observation Links.

The main active GUI window is titled "Nucleus\_NIRSpec (Obs 1) of JWST Draft Proposal (APT\_Arp220.aptx)". It contains several sections:
 

- Number**: 1, **Status**: UNKNOWN
- Label**: Nucleus\_NIRSpec
- Instrument**: NIRSPEC
- Template**: NIRSpec IFU Spectroscopy
- Target**: 1 IC-4553
- Visit Splitting**: 40.0 Arcsec, **Number of Visits**: 1
- Duration (secs)**: 3285 (Science), 5662 (Total Charged)
- Data volume**: 5,916 MB
- TA Method**: VERIFY\_ONLY
- Pointing Verification Image**: Filter F110W, PV Exposure Time NRSRAPID, PV No. of Groups 1, PV No. of Integrations 1, PV Photon Collect Duration 10.737, PV Total Photon Collect Duration 10.737, Pointing Verification MSA Configuration ALLCLOSED
- Science Parameters**: Dither Type CYCLING, Size MEDIUM, Starting Point 1, Number of Points 4. A table lists 6 Gratings/Filters with columns for #, Grating/Filter, Readout Pattern, No. of Groups, No. of Integrations, Leakcal, Dither, Autocal, Photon Collect, and Total Photon C...

At the bottom of the GUI is a table with columns: Observa... Δ, Number, Status, Label, Science, Total Char..., Parallel Slo..., Instrument, Template, Coordinate..., Coordinate..., Target, Number of..., Splitting Di..., Comments. The table contains 4 rows of observation data.

Active GUI window

Download APT (current version 25.0.3):

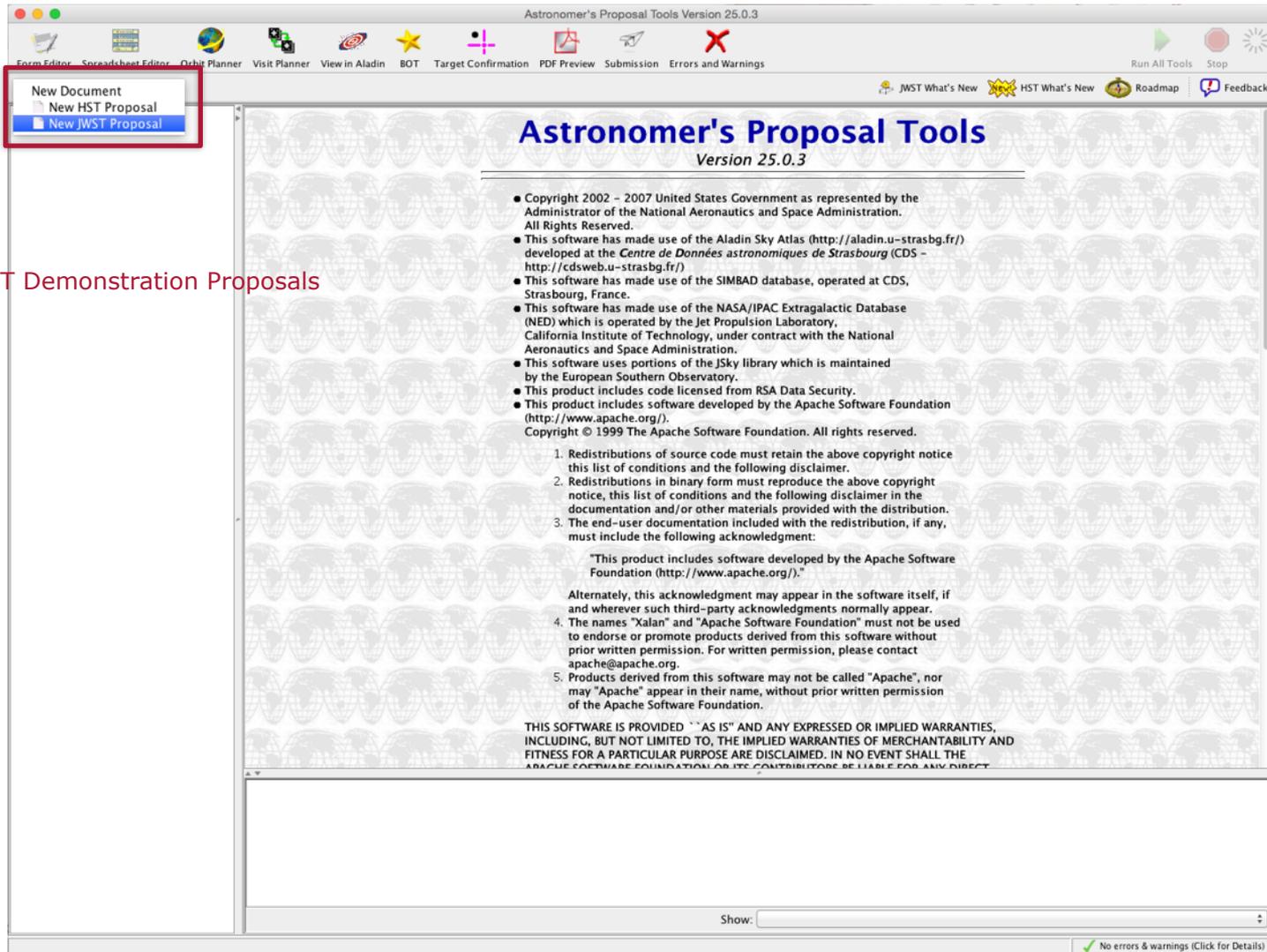
[apt.stsci.edu](http://apt.stsci.edu)

Help desk:

[jwsthelphelp.stsci.edu](http://jwsthelphelp.stsci.edu)



# Starting a JWST proposal in APT



See also  
File > JWST Demonstration Proposals

# Starting a JWST proposal in APT: proposal basics

Astronomer's Proposal Tools Version 25.0.3 - JWST Draft Proposal (Unsaved)

Form Editor | Spreadsheet Editor | Orbit Planner | Visit Planner | View in Aladin | BOT | Target Confirmation | PDF Preview | Submission | Errors and Warnings | Run All Tools | Stop

New JWST Proposal | New Co-I | JWST What's New | HST What's New | Roadmap | Feedback

### Proposal Information of JWST Draft Proposal (Unsaved)

**X** Title

**X** Abstract

Remaining characters: 1700

Proposal ID

Category   Calibration  Treasury

Pure Parallel Proposal

Cycle

[▶ Explain unschedulable observations](#)

Science Time (hours)

Charged Time (hours)

[▶ Request custom time allocation](#)

[▶ Future cycles](#)

Proprietary Period  Default is 12 Months

Allow Restricted  (this session only)

**X** Scientific Category

**X** Science Keywords

Choose 2 to 5 science keywords.

Alternate Category  (Optional)

[▶ Coordinated telescopes](#)

**X** PDF Attachment

**X** 8 errors & warnings: (Click for Details)

# Starting a JWST proposal in APT: proposal basics

Astronomer's Proposal Tools Version 25.0.3 - JWST Draft Proposal (Arp220.aptx)

Form Editor | Spreadsheet Editor | Orbit Planner | Visit Planner | View in Aladin | BOT | Target Confirmation | PDF Preview | Submission | Errors and Warnings | Run All Tools | Stop

New JWST Proposal | New Co-I | JWST What's New | HST What's New | Roadmap | Feedback

### Proposal Information of JWST Draft Proposal (Arp220.aptx)

**Title** NIRSpec IFU of Arp220  
**Abstract** Arp 220

Remaining characters: 1693

**Proposal ID**

**Category**   Calibration  Treasury

**Pure Parallel Proposal**

**Cycle**  [▶ Explain unschedulable observations](#)

**Science Time (hours)**

**Charged Time (hours)**  [▶ Request custom time allocation](#)  
[▶ Future cycles](#)

**Proprietary Period**  Default is 12 Months

**Allow Restricted**  (this session only)

**Scientific Category**

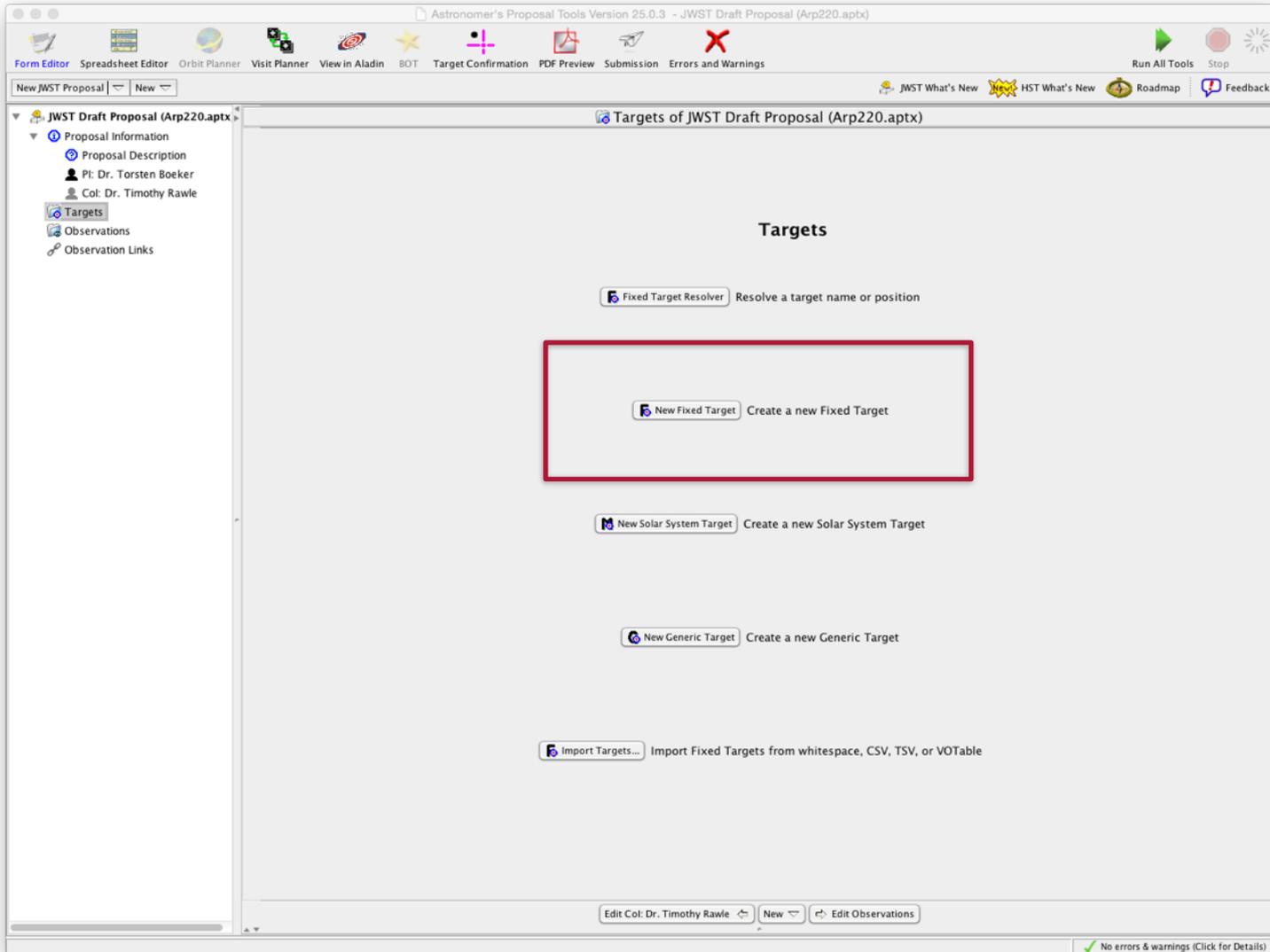
**Science Keywords**  Choose 2 to 5 science keywords.

**Alternate Category**  (Optional) [▶ Coordinated telescopes](#)

**PDF Attachment**

No errors & warnings (Click for Details)

# Starting a JWST proposal in APT: targets



# Starting a JWST proposal in APT: targets

Astronomer's Proposal Tools Version 25.0.3 - JWST Draft Proposal (Arp220.aptx)

Form Editor Spreadsheet Editor Orbit Planner Visit Planner View in Aladin BOT Target Confirmation PDF Preview Submission Errors and Warnings Run All Tools Stop

New JWST Proposal New JWST What's New HST What's New Roadmap Feedback

**1 Unnamed Target of JWST Draft Proposal (Arp220.aptx)**

Number

**X** Name in the Proposal  (unique within proposal)

Name for the Archive  (standard resolvable name)

**X** Category

Description

Choose 1 to 5 items after selecting a category.

**X** J2000 Coordinates (ICRS) RA:  Dec:

Uncertainty RA:   Dec:

Extended  Recommended for spectroscopy (for advice to data reduction pipeline)

Proper Motion RA:   Dec:

Epoch

Annual Parallax (arcsec)

Comments

Edit Fixed Targets New Edit Observations

**X** 4 errors & warnings (Click for Details)

# Starting a JWST proposal in APT: targets

Astronomer's Proposal Tools Version 25.0.3 - JWST Draft Proposal (Arp220.aptx)

Form Editor | Spreadsheet Editor | Orbit Planner | Visit Planner | View in Aladin | BOT | Target Confirmation | PDF Preview | Submission | Errors and Warnings | Run All Tools | Stop

New JWST Proposal | New

JWST What's New | HST What's New | Roadmap | Feedback

### 1 IC-4553 of JWST Draft Proposal (Arp220.aptx)

Number:

Name in the Proposal:  (unique within proposal)

Name for the Archive:  (standard resolvable name)

Category:

Description:

Choose 1 to 5 items after selecting a category.

J2000 Coordinates (ICRS) RA:  Dec:

Uncertainty RA:  Arcsec  Dec:  Arcsec

Extended:  Recommended for spectroscopy (for advice to data reduction pipeline)

Proper Motion RA:  None Selected  Dec:  None Selected

Epoch:

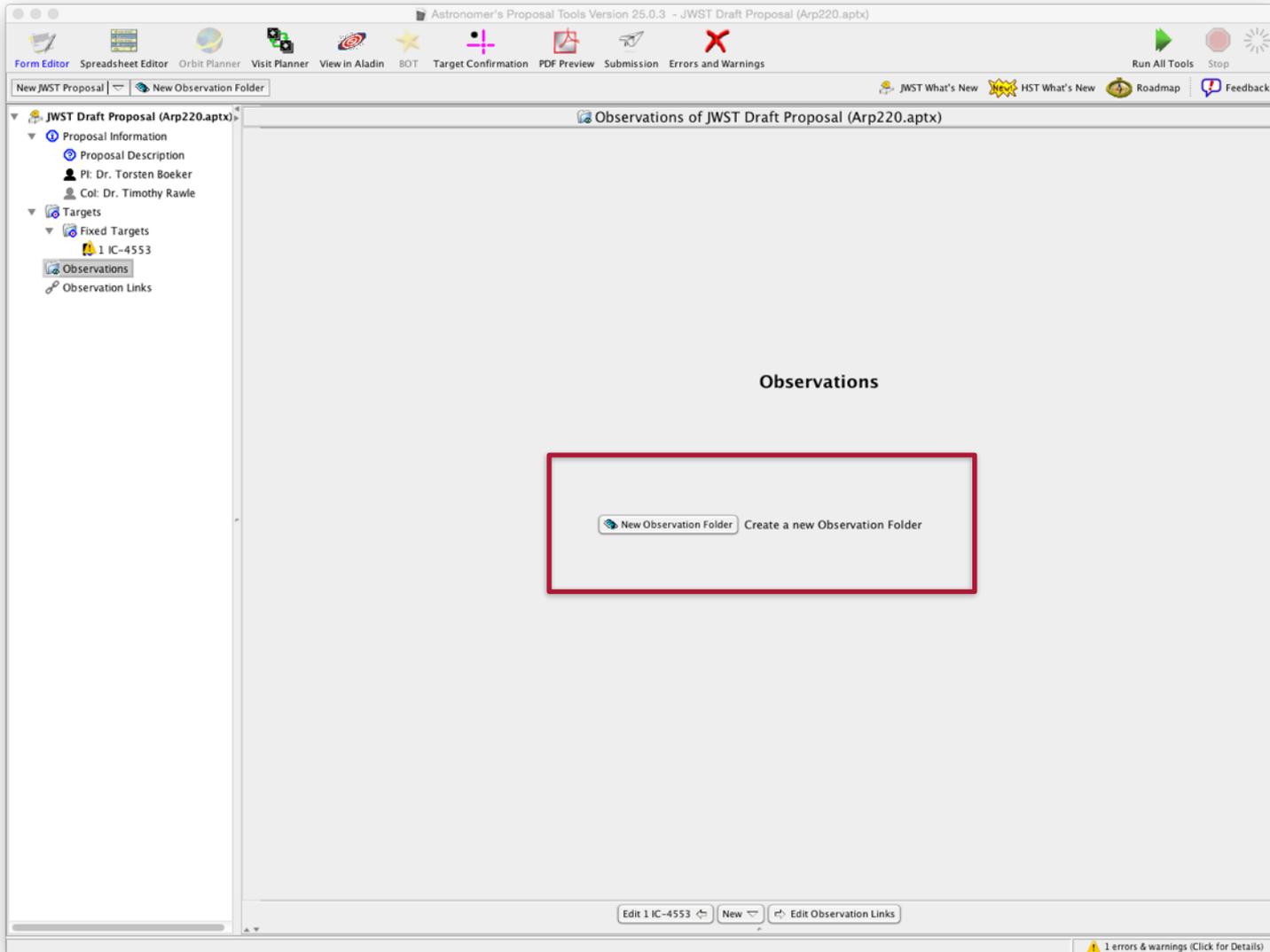
Annual Parallax (arcsec):

Comments:

Edit Fixed Targets | New | Edit Observations

1 errors & warnings (Click for Details)

# Starting a JWST proposal in APT: observations



# Starting a JWST proposal in APT: observations

The screenshot shows the 'Astronomer's Proposal Tools Version 25.0.3 - JWST Draft Proposal (Arp220.aptx)' window. The left sidebar contains a tree view with 'Observation Folder' selected. A red arrow points to this folder. The main area shows the 'Observation Folder of JWST Draft Proposal (Arp220.aptx)' with a red box around the 'MSA Planning Tool' button. Another red box highlights the 'Observations' table, which contains one entry with the number '1'. Below the table are buttons for 'Add', 'Duplicate', 'Insert Above', and 'Remove'. A red arrow also points to the 'Observations' table. At the bottom right, there is a status bar indicating '3 errors & warnings (Click for Details)'.

Button to access MPT (see Giovanna's talk later)

Summary of Observations in Observation Folder  
(automatically populated as observations are added)

# NIRSpec IFU: observations

Astronomer's Proposal Tools Version 25.0.3 - JWST Draft Proposal (Arp220.aptx)

Form Editor Spreadsheet Editor Orbit Planner Visit Planner View in Aladin BOT Target Confirmation PDF Preview Submission Errors and Warnings Run All Tools Stop

New JWST Proposal New JWST What's New HST What's New Roadmap Feedback

**JWST Draft Proposal (Arp220.a...)**

- Proposal Information
  - Proposal Description
  - PI: Dr. Torsten Boeker
  - CoI: Dr. Timothy Rawle
- Targets
  - Fixed Targets
    - 1 IC-4553
  - Observations
    - Observation Folder
      - Observation 1**
    - Observation Links

**Observation 1 of JWST Draft Proposal (Arp220.aptx)**

Number 1 Status:

Label

**X** Instrument None Selected

Template None Selected

**X** Target None Selected

Splitting Distance	Number of Visits
5.0 Arcsec	0

Visit Splitting	Science	Total Charged
0	0	0

Duration (secs) 0

Data volume unavailable

Template Properties Special Requirements Comments

Once a Template has been selected, template properties may be selected.

Edit Observation Folder New Edit Observation Links

3 errors & warnings (Click for Details)

# NIRSpec IFU: observations

Observation 1 of JWST Draft Proposal (Arp220.aptx)

Number: 1 Status: UNKNOWN

Instrument: NIRSPEC

Template: NIRSpec IFU Spectroscopy

Target: None Selected

Visit Splitting: 5.0 Arcsec 1

Duration (secs): 0 3860

Data volume: 0 MB

TA Method: TACQ

Target Acquisition Parameters

Science Parameters

Dither Type: None Selected

#	Grating/Filter	Readout Pattern	No. of Groups	No. of Integrations	Leakal	Dither	Autocal	Photon Collect ...	Total Photon C...
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Buttons: Add, Duplicate, Insert Above, Remove

4 errors & warnings (Click for Details)

- MIRI
  - NIRCAM
  - NIRSPEC**
  - NIRISS
- 
- NIRSpec Fixed Slit Spectroscopy
  - NIRSpec IFU Spectroscopy**
  - NIRSpec MultiObject Spectroscopy
  - NIRSpec Bright Object Time Series

Template specific parameters

# NIRSpec IFU: observations

The screenshot shows the 'Observation 1 of JWST Draft Proposal (Arp220.aptx)' configuration window. Key elements include:

- TA options:** A dropdown menu on the left shows 'TACQ' and 'VERIFY\_ONLY' (selected).
- Target selection:** A dropdown menu in the 'Target' field shows '1 IC-4553'.
- Parameters for VERIFY\_ONLY:** The 'Pointing Verification Image' section is highlighted, showing 'Filter: F110W', 'PV Exposure Time: NRSRAPID', and 'Pointing Verification MSA Configuration: ALLCLOSED'.
- Dither options:** A dropdown menu on the left shows 'None Selected' (selected), with other options like '2-POINT-NOD', '4-POINT-NOD', '4-POINT-DITHER', 'CYCLING', and 'SPARSE-CYCLING'.
- Science Parameters:** The 'Dither Parameters' section shows 'Dither Type: CYCLING' and 'Size: None Selected'.

TA options

- TACQ
- ✓ VERIFY\_ONLY

Parameters for VERIFY\_ONLY

Dither options

- ✓ None Selected
- NONE
- 2-POINT-NOD
- 4-POINT-NOD
- 4-POINT-DITHER
- CYCLING
- SPARSE-CYCLING

Menu of targets in Target folder

Astronomer's Proposal Tools Version 25.0.3 - JWST Draft Proposal (Arp220.aptx)

Form Editor Spreadsheet Editor Orbit Planner Visit Planner View in Aladin BOT Target Confirmation PDF Preview Submission Errors and Warnings

New JWST Proposal New

JWST What's New HST What's New Roadmap Feedback

JWST Draft Proposal (Arp220.aptx)

Arp220 central (Obs 1) of JWST Draft Proposal (Arp220.aptx)

Number 1 Status: UNKNOWN

Label Arp220 central

Instrument NIRSPEC

Template NIRSpec IFU Spectroscopy

Target 1 IC-4553

Splitting Distance Number of Visits

Visit Splitting: 40.0 Arcsec 1

Science Total Charged

Duration (secs) 2628 6789

Data volume: 4,736 MB

NIRSpec IFU Spectroscopy Mosaic Properties Special Requirements Comments

TA Method VERIFY\_ONLY

Pointing Verification Image

Filter F110W

PV Readout Pattern PV No. of Groups PV No. of Integrations PV Photon Collect Duration PV Total Photon Collect Duration

PV Exposure Time NRSRAPID 1 1 10.737 10.737

Pointing Verification MSA Configuration ALLCLOSED

Science Parameters

Dither Type Size Starting Point Number of Points

Dither Parameters CYCLING MEDIUM 1 4

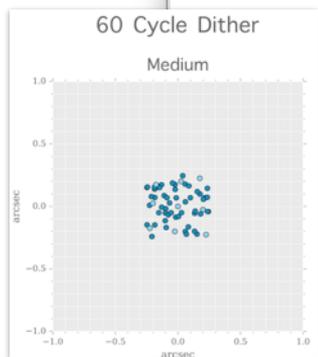
#	Grating/Filter	Readout Pattern	No. of Groups	No. of Integrations	Leakal	Dither	Autocal	Photon Collect ...	Total Photon C...
1	G140H/F100LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
2	G235H/F170LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
3	G395H/F290LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332

Gratings/Filters

Add Duplicate Insert Above Remove

Edit Observation Folder New Edit Visit 1:1

No errors & warnings (Click for Details)



Grating / filter / readout

Autocal: Require internal flat field and wavelength cal. exposures specific to this program?

Astronomer's Proposal Tools Version 25.0.3 - JWST Draft Proposal (Arp220.aptx)

Form Editor | Spreadsheet Editor | Orbit Planner | Visit Planner | View in Aladin | BOT | Target Confirmation | PDF Preview | Submission | Errors and Warnings | Run All Tools | Stop

New JWST Proposal | New

JWST Draft Proposal (Arp220.aptx) > Arp220 central (Obs 1) of JWST Draft Proposal (Arp220.aptx)

Number: 1 | Status: UNKNOWN

Label: Arp220 central

Instrument: NIRSPEC

Template: NIRSpec IFU Spectroscopy

Target: 1 IC-4553

Splitting Distance: 40.0 Arcsec | Number of Visits: 1

Visit Splitting: 40.0 Arcsec | 1

Science | Total Charged

Duration (secs): 3285 | 7724

Data volume: 5,916 MB

NIRSpec IFU Spectroscopy | Mosaic Properties | Special Requirements | Comments

TA Method: VERIFY\_ONLY

Pointing Verification Image

Filter: F110W

PV Readout Pattern: NRSRAPID | PV No. of Groups: 1 | PV No. of Integrations: 1 | PV Photon Collect Duration: 10.737 | PV Total Photon Collect Duration: 10.737

Pointing Verification MSA Configuration: ALLCLOSED

Science Parameters

Dither Type: CYCLING | Size: MEDIUM | Starting Point: 1 | Number of Points: 4

#	Grating/Filter	Readout Pattern	No. of Groups	No. of Integrations	Leakal	Dither	Autocal	Photon Collect ...	Total Photon C...
1	G140H/F100LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
2	G140H/F100LP	NRSIRS2RAPID	15	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	218.833
3	G235H/F170LP	NRSIRS2RAPID	15	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
4	G235H/F170LP	NRSIRS2RAPID	15	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	218.833
5	G395H/F290LP	NRSIRS2RAPID	15	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
6	G395H/F290LP	NRSIRS2RAPID	15	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	218.833

Add | Duplicate | Insert Above | Remove

Edit Observation Folder | New | Edit Visit 1:1

No errors & warnings (Click for Details)

1 leakage exposure per dither set (tick "Dither" for 1 per dither position) to help remove background through MSA (i.e. MSA=ALLCLOSED, IFU=closed)

The screenshot shows the Astronomer's Proposal Tools (APT) Version 25.0.3 interface. The main window displays the 'Arp220 of JWST Draft Proposal (APT\_Arp220.aptx)' with the 'MSA Planning Tool' tab active. The 'Observations' table is as follows:

Number	Status	Label	Instrument	Template	Target	Continue Editing...
1	UNKNOWN	Nucleus_NIRSpec	NIRSPEC	NIRSpec IFU Spectrosc...	1 ARP220	Edit Nucleus NIRSpec (Obs 1)...
2	UNKNOWN	Offset_NIRSpec	NIRSPEC	NIRSpec IFU Spectrosc...	2 ARP220OFFSET	Edit Offset NIRSpec (Obs 2)...
3	UNKNOWN	Nucleus_MIRI	MIRI	MIRI Medium Resolutio...	1 ARP220	Edit Nucleus MIRI (Obs 3)...
4	UNKNOWN	Background_MIRI	MIRI	MIRI Medium Resolutio...	3 ARP220BACKGROUND	Edit Background MIRI (Obs 4)...

Below the table are buttons for 'Add', 'Duplicate', 'Insert Above', and 'Remove'. At the bottom of the window, there are buttons for 'Edit Observations', 'New', and 'Edit Nucleus\_NIRSpec (Obs 1)'. A status bar at the bottom right indicates 'No errors & warnings (Click for Details)'.

- Multiple instruments using same targets
- Each pointing (dither set) has separate Observation

**NIRSpec** (nucleus + offset,  
both with leakage exposures)

**MIRI** (nucleus + background)

# APT Aladin viewer

**Pointing Verification Image**

Filter: F110W

PV Exposure Time	NRSRAPID	1	1	10.737	10.737
PV Readout Pattern	NRSRAPID	1	1	10.737	10.737

Pointing Verification MSA Configuration: ALLCLOSED

**Science Parameters**

Dither Type	Size	Starting Point	Number of Points
CYCLING	MEDIUM	1	4

#	Grating/Filter	Readout Pattern	No. of Groups	No. of Integrations	Leakcal	Dither	Autocal	Photon Collect ...	Total Photon C...
1	G140H/F100LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
2	G140H/F100LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	218.833
3	G235H/F170LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
4	G235H/F170LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	218.833
5	G395H/F290LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	875.332
6	G395H/F290LP	NRSIRS2RAPID	15	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NONE	218.833	218.833

Observa...	Number	Status	Label	Science	Total Char...	Parallel Slo...	Instrument	Template	Coordinate...	Coordinate...	Target	Number of ...	Splitting Di...	Comments
Nucleus_N...	1	UNKNOWN	Nucleus_N...	3285	5662		NIRSPEC	NIRSpec IF...			1 ARP220	1	40.0 Arcsec	
Offset_NIR...	2	UNKNOWN	Offset_NIR...	3285	5662		NIRSPEC	NIRSpec IF...			2 ARP220...	1	40.0 Arcsec	
Nucleus_...	3	UNKNOWN	Nucleus_...	1668	4142		MIRI	MIRI Medi...			1 ARP220	1	40.0 Arcsec	
Background...	4	UNKNOWN	Backgroun...	417	3883		MIRI	MIRI Medi...			3 ARP220...	1	40.0 Arcsec	

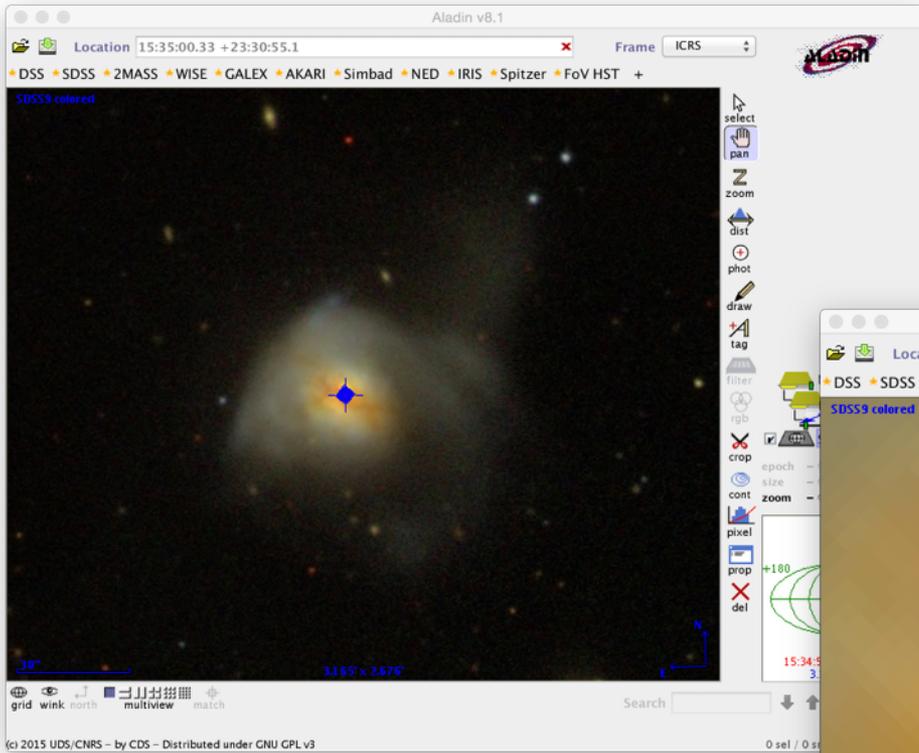
To return to previous view

**APT Aladin Controls:**

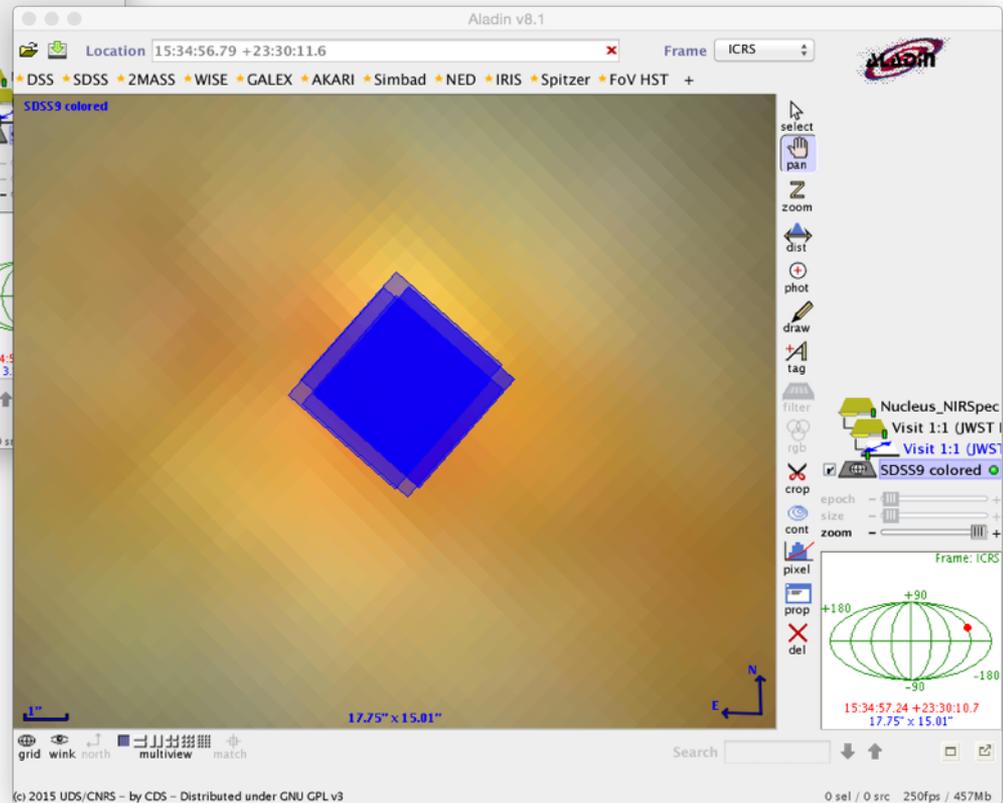
All functionality will be very familiar to HST proposers

Aladin display will automatically open showing the correct field and footprint...

Observa...	Number	Status	Label	Science	Total Char...	Parallel Slo...	Instrument	Template	Coordinate...	Coordinate...	Target	Number of ...	Splitting Di...	Comments
Nucleus_N...	1	UNKNOWN	Nucleus_N...	3285	5662		NIRSPEC	NIRSPEC IF...			1 ARP220	1	40.0 Arcsec	



Automatically loads footprints (all dither positions) of selected Observation(s)



Can overlay with public imaging or load FITS from local computer

**APT Aladin Controls (all JWST apertures are preliminary)**

Manage Proposal Changes

Pending Changes

**JWST All Apertures**

- JWST Draft Proposal (APT\_Arp220.aptx)
  - Nucleus\_NIRSpec (Obs 1)
    - Move: Visit 1:1
      - From: POS TARG (-0, -0)
      - To: POS TARG (-1.94, -1.53)

Graphically repositioning targets and exposures in Aladin creates pending changes which can be committed back to the proposal.

Note that when the Create POS TARGs button is toggled, an exposure will be offset from its target instead of moving the target.

Changes made in Aladin viewer.. can commit some/all of them to change the APT parameters to match

Aladin v8.1

Location: 15:34:57.53 +23:30:14.8

Frame: ICRS

Pointing shifted left within Aladin

Nucleus\_NIRSpec Visit 1:1 JWST SDDS9 colored

15:34:57.25 +23:30:11.5  
17.75° x 15.01°

**APT Aladin Controls (all JWST apertures are preliminary)**

Select all Observations

Add in "coverage circles" and "orient ranges"

Observa...	Number	Status	Label	Science	Total Char...
Nucleus_N...	1	UNKNOWN	Nucleus_N...	3285	5662
Offset_NIR...	2	UNKNOWN	Offset_NIR...	3285	5662
Nucleus_...	3	UNKNOWN	Nucleus_...	1668	4142
Background...	4	UNKNOWN	Background...	417	3883

Aladin v8.1

Location: [input] Frame: ICRS

SDSS9 colored

Background\_MIRI Visit 4:1 JWST | Orientations Visit 4:1 JWST | Visit 4:1 QWST | Nucleus\_MIRI (Ob | Orientations Visit 3:1 JWST | Visit 3:1 QWST | Offset\_NIRSpec ( | Orientations Visit 2:1 JWST | Visit 2:1 QWST | Nucleus\_NIRSpec | Orientations Visit 1:1 JWST | Visit 1:1 QWST

SDSS9 colored

epoch - | size - | cont - | zoom -

Frame: ICRS

1534 57.60 +23:30:25.6  
1.272 x 1.075

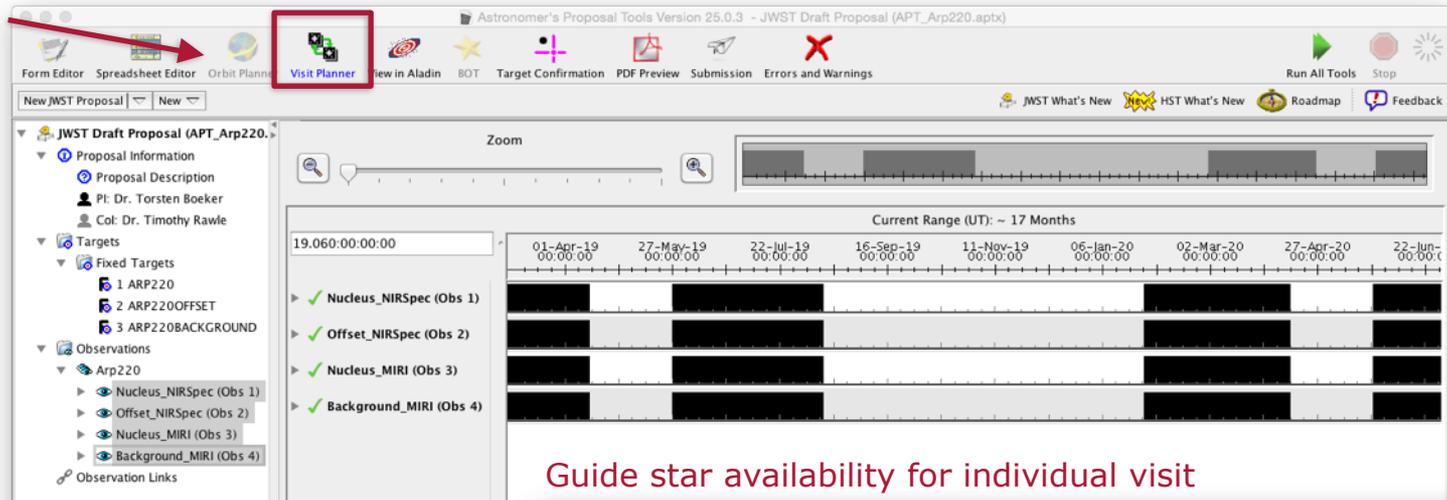
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549 sel / 0 src 333fps / 753Mb

# APT visit planner

“Orbit planner”  
not available  
for JWST

“Visit planner” to check schedulability



## Guide star availability for individual visit

