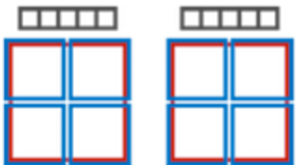


# NIRCam Mosaics and Parallels Tutorial

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**STScI** | SPACE TELESCOPE  
SCIENCE INSTITUTE

- JWST Draft Proposal (Unsaved)
  - Proposal Information
  - Targets
    - Fixed Targets
      - 1 M-101
      - Observations**
      - Observation Links

### Observations of JWST Draft Proposal (Unsaved)

## Observations

 New Observation Folder Create a new Observation Folder

1. Create an observation

Edit 1 M-101 New Edit Observation Links

*You've started a JWST proposal*

*You've already defined a target*

# Blank Observation Window

The screenshot displays the 'Astronomer's Proposal Tools Version 25.0 Beta (Thu Dec 08 2016) - JWST Draft Proposal (Unsaved)' window. The interface includes a top menu bar with icons for Form Editor, Spreadsheet Editor, Orbit Planner, Visit Planner, View in Aladin, BOT, Target Confirmation, PDF Preview, Submission, and Errors and Warnings. Below the menu bar is a toolbar with 'New JWST Proposal' and 'New' buttons. The main workspace is titled 'Observation 1 of JWST Draft Proposal (Unsaved)'. On the left, a sidebar shows a tree view with 'JWST Draft Proposal (Unsaved)' expanded to show 'Observation 1' selected. The main area contains the following fields and controls:

- Number: 1
- Status: UNKNOWN
- Label: (empty text field)
- Instrument: None Selected (dropdown menu)
- Template: None Selected (dropdown menu)
- Target: None Selected (dropdown menu)
- Visit Splitting: 5.0 Arcsec (text field)
- Number of Visits: 0 (text field)
- Duration (secs): 0 (text field)
- Science: 0 (text field)
- Total Charged: 0 (text field)

Data volume unavailable

Buttons at the bottom: Template Properties (highlighted), Special Requirements, Comments

Text at the bottom: Once a Template has been selected, template properties may be selected.

- ▼ JWST Draft Proposal (Unsaved)
  - ▶ Proposal Information
  - ▼ Targets
    - ▼ Fixed Targets
      - 🚨 1 M-101
  - ▼ Observations
    - ▼ Observation Folder
      - ▶ **M101 Mosaic (Obs 1)**
    - Observation Links

*Once you select NIRCcam Imaging from Template, a bunch of options show up*

👁 M101 Mosaic (Obs 1) of JWST Draft Proposal (Unsave

Number  Status:

Label

Instrument

Template

Coordinated Parallel

✗ Target

Visit Splitting:

Duration (secs)

Data volume: 0 MB

NIRCcam Imaging    Mosaic Properties    Special Requirements

✗ Module

✗ Subarray

✗ Dither Parameters

✗ Filters

#	Short Filter	Long Filter	Readout Pattern	No. of Groups	No. of

- ▼ JWST Draft Proposal (Unsaved)
  - ▶ Proposal Information
  - ▼ Targets
    - ▼ Fixed Targets
      - 1 M-101
  - ▼ Observations
    - ▼ Observation Folder
      - ▶ M101 Mosaic (Obs 1)
    - Observation Links

M101 Mosaic (Obs 1) of JWST Draft Proposal (Unsaved)

Number: 1    Status: UNKNOWN

Label: M101 Mosaic

Instrument: NIRCAM

Template: NIRCAM Imaging

Coordinated Parallel:

Target: 1 M-101

	Splitting Distance	Number of Visits
Visit Splitting:	40.0 Arcsec	1
	Science	Total Charged
Duration (secs)	0	2430

Data volume: 0 MB

X NIRCAM Imaging    Mosaic Properties    Special Requirements    C

X Module: None Selected

X Subarray: None Selected

X Dither Parameters: Primary Dither Type: None Selected

X Filters:

#	Short Filter	Long Filter	Readout Pattern	No. of Groups	No. of In

Add    Duplicate    Insert Above    R

*Once you select a target, you see your visit splitting distance (maximum move allowed before a new guide star acquisition)*

- JWST Draft Proposal (Unsaved)
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      - M101 Mosaic (Obs 1)
  - Observation Links

M101 Mosaic (Obs 1) of JWST Draft Proposal (Unsaved)

Number: 1    Status: UNKNOWN

Label: M101 Mosaic

Instrument: NIRCAM

Template: NIRCcam Imaging

Coordinated Parallel:

Target: 1 M-101

Splitting Distance:

Visit Splitting: 40.0 Arcsec

Science:

Duration (secs): 0

Data volume: 0 MB

NIRCcam Imaging  
 Module  
 Subarray

None Selected  
 A  
 B  
 ALL

NIRCcam Imaging    Mosaic Properties    Special Requirements    Comments

Module: ALL

Subarray: FULL

Primary Dither Type: FULL    Full Primary Dithers: 3    Subpixel Positions: 4

Dither Parameters: FULL    3    4

Filters

#	Short Filter	Long Filter	Readout Pattern	No. of Groups	No. of Integrat...	Phot

- Choose:*
- *Module (Both, denoted 'ALL' here),*
  - *Array (FULL),*
  - *Dither pattern*

	Splitting Distance	Number of Visits
Visit Splitting:	40.0 Arcsec	3
	Science	Total Charged
Duration (secs)	9792	16029

Data volume: 10,067 MB

*3 visits because you've done 3 'FULL' dithers*

NIRCam Imaging

Mosaic Properties

Special Requirements

Comments

Module ALL

Subarray FULL

Primary Dither Type

Full Primary Dithers

Subpixel Positions

Dither Parameters

FULL

3

4

*Choose filters and readout patterns*

Filters

#	Short Filter	Long Filter	Readout Pattern	No. of Groups	No. of Integrat...	Photon Collect...	Total Photon C...
1	F150W	F460M	MEDIUM8	4	2	815.994	9791.928



Add

Duplicate

Insert Above

Remove

X Filters

#	Short Filter	Long Filter	Readout Pattern	No. of Groups	No. of Integrat...	Photon Col
X 1	F150W	None...				0.0

- ✓ None Selected
- F277W
- F322W2
- F356W
- F444W
- F250M
- F300M
- F335M

*Choose from drop-down options*

ate

Insert Above

Remove

*In the Mosaic Properties tab, specify number of rows and columns, shifts and overlaps*

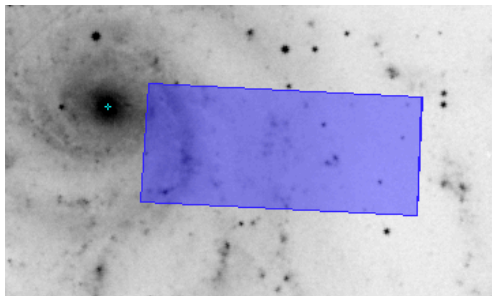
NIRCam Imaging **Mosaic Properties** Special Requirements Comments

Rows  Columns

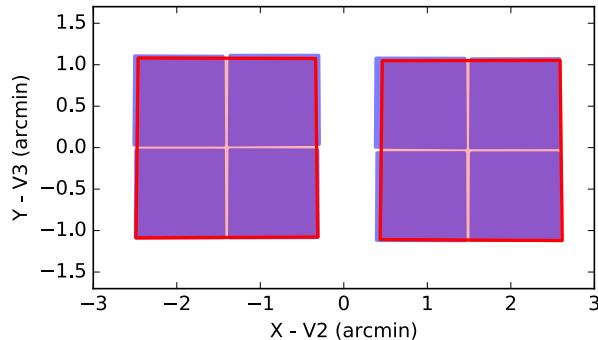
Row Overlap %  Column Overlap %

Row shift  Column shift

*Footprint does not show gaps. FULL dither pattern designed to cover them*



NIRCam FOV



Aladin v8.1

Location

DSS SDSS 2MASS WISE GALEX AKARI Simbad NED IRIS Spitzer +

STScI POSS2UKSTU\_Red 1:48:31.258 + 54:28:55.5-1

4607

M101 Mosaic C

- Visit 1:6 QWS
- Visit 1:5 QWS
- Visit 1:4 QWS
- Visit 1:3 QWS
- Visit 1:2 QWS
- Visit 1:1 QWS
- Visit 1:12 QM
- Visit 1:11 QM
- Visit 1:10 QM
- Visit 1:9 QWS
- Visit 1:8 QWS
- Visit 1:7 QWS

STScI POSS2UK

epoch

size

zoom

22.85° x 15.42°

29.96° x 29.96°

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0 set / 0 src - 386px / 399M



**JWST Draft Proposal (Unsaved)**

- Proposal Information
- Targets
  - Fixed Targets
    - 1 M-101
- Observations
  - Observation Folder
    - M101 Mosaic (Obs 1)
  - Observation Links

### M101 Mosaic (Obs 1) of JWST Draft Proposal (Unsaved)

Instrument: NIRCAM

Template: NIRCImaging

Coordinated Parallel:

Target: 1 M-101

Visit Splitting:	Splitting Distance	Number of Visits
40.0 Arcsec		12
	Science	Total Charged
Duration (secs)	39168	58747

Data volume: 40,266 MB

Group Visits within 53.0 Days  
Visits Same PA

*You can restrict the PA of your observation.*

Click 'Add...' box

Timing lit

**Position Angle** PA Range

- Offset
- No Parallel
- On Hold
- Target Of Opportunity
- Maximum Visit Duration
- Background Noise

PA Offset Link

Same PA Link

errors & warnings (Click for Details)

*Mosaic Groups: Create by clicking the 'Split Tile' button below*

NIRCam Imaging **Mosaic Properties** Special Requirements Comments

Rows  Columns

Row Overlap %  Column Overlap %

Row shift  Column shift

**Mosaic Tiles:**

Tile Number	Tile State	Visits	Tile Split	Tile Copy
1	Tile Included	[Visit 1:1, Visit 1:2, ...	Split Tile to New Observation	Copy Tile to New Observation
2	Tile Included	[Visit 1:4, Visit 1:5, ...	Split Tile to New Observation	Copy Tile to New Observation
3	Tile Included	[Visit 1:7, Visit 1:8, ...	Split Tile to New Observation	Copy Tile to New Observation
4	Tile Included	[Visit 1:10, Visit 1:1...	Split Tile to New Observation	Copy Tile to New Observation

*Must restrict the PA first.*

*You may get an error message the first time you do this. It will still work – just click back into 'Form Editor' at the top left.*

Astronomer's Proposal Editor (APE) interface showing the 'Form Editor' tab selected. The interface includes icons for 'Form Editor', 'Spreadsheet Editor', 'Orbit Planner', 'Visit Planner', and 'View in Aladin'. A dropdown menu for 'New JWST Proposal' is visible, and the current proposal is identified as 'JWST Draft Proposal (Unsaved)'.

- M101 Mosaic Mosaic Group
  - M101 Mosaic (Obs 1)
  - M101 Mosaic Split off Tile
  - Observation Folder
  - Observation Links

Splitting Distance: 40.0 Arcsec      Number of Visits: 9

Visit Splitting: 40.0 Arcsec      9

Science:      Total Charged: 44532

Duration (secs): 29376

Data volume: 30,199 MB

NIRCam Imaging    **Mosaic Properties**    Special Requirements    Comments

Rows: 2      Columns: 2

Row Overlap %: 10.0      Column Overlap %: 10.0

Row shift: 0.0      Column shift: 0.0

View in Aladin

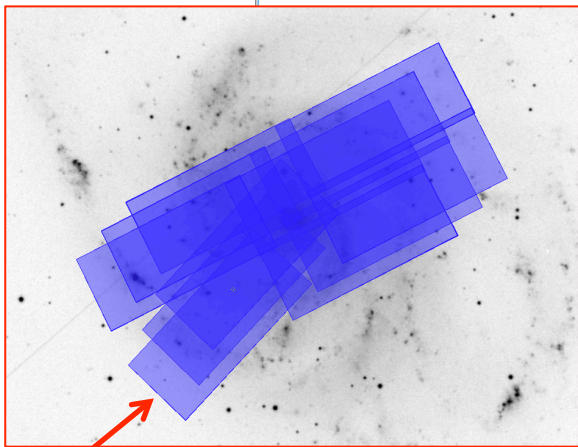
**Mosaic Tiles:**

Tile Number	Tile State	Visits	Tile Split	Tile Copy
1	Tile Removed	[ ]	Split Tile to New Observation	Copy Tile to New Observation
2	Tile Included	[Visit 1:1, Visit 1:2, ...]	Split Tile to New Observation	Copy Tile to New Observation
3	Tile Included	[Visit 1:4, Visit 1:5, ...]	Split Tile to New Observation	Copy Tile to New Observation
4	Tile Included	[Visit 1:7, Visit 1:8, ...]	Split Tile to New Observation	Copy Tile to New Observation

Insert New Observation into Mosaic

Edit M101 Mosaic Mosaic Group    New    Edit Visit 1:1

*The tile you've split now has its own entry & can be manipulated separately*



*I've changed the PA restriction on the split tile*

Data volume: 10,067 MB

NIRCam Imaging    **Mosaic Properties**    Special Requirements    Comments

Rows: 1      Columns: 1

Row Overlap %: 10.0      Column Overlap %: 10.0

Row shift: 0.0      Column shift: 0.0

View in Aladin

**Mosaic Tiles:**

Tile Number	Tile State	Visits	Tile Split	Tile Copy
1	Tile Included	[Visit 2:1, Visit 2:2, ...]	Split Tile to New Observation	Copy Tile to New Observation

Insert New Observation into Mosaic

Edit Visit 1:9    New    Edit Visit 2:1

8 errors & warnings (Click for Details)

JWST Draft Proposal (Unsaved)

- ▶ Proposal Information
- ▶ Targets
  - ▶ Fixed Targets
    - 📷 1 M-101
    - ⚠️ 2 M-101-TILE-1
    - ⚠️ 3 M-101-TILE-2
  - ▶ Observations
    - ▶ Observation Folder
      - ▶ **M101 Mosaic (Obs 1)**
    - 🔗 Observation Links


M101 Mosaic (Obs 1) of JWST Draft Proposal (Unsaved)

Number  Status:

Label

Prime Instrument

Template

 Coordinated Parallel

Target

Splitting Distance

Number of Visits

Visit Splitting:

Science

Total Charged

NIRCam Imaging Duration (secs)

MIRI Imaging Duration (secs)

Data volume: 3,356 MB

NIRCam Imaging

MIRI Imaging

Mosaic Properties

Special Requirements

Comments

Module

Subarray

Primary Dither Type

Dither Parameters

*You have to reset your dithers because the choices are different*

Filters

#	Short Filter	Long Filter	Readout Pattern	No. of Groups	No. of Integrat...	Photon Collect...	Total Photon C...
1	F150W	F460M	MEDIUM8	4	2	815.994	815.994

Add Duplicate Insert Above Remove

Edit Observation Folder

New

Edit Visit 1:1

*Add a parallel observation*

*You can select subpixel dither patterns optimized for both NIRCam and MIRI sampling*

Science

Total Charged

NIRCam Imaging Duration (secs) 19584 33595

MIRI Imaging Duration (secs) 552

Data volume: 20,641 MB

Approaching data volume limit for one 12 hour period

NIRCam Imaging MIRI Imaging Mosaic Properties Special Requirements Comments

Subarray FULL

#	No. of Expos...	Filter	Readout Patt...	No. of Groups	No. of Integr...	Photon Coll...	Total Photon...	S/N
1	1	F1130W	FAST	4	2	22.2	133.2	Get S/N

Filters

Choose the parallel MIRI array size, filters, and readout patterns

Add Duplicate Insert Above Remove

Fill in gaps by changing row/column overlap or by starting with MIRI as the primary SI.

