



**STScI** | SPACE TELESCOPE  
SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

# MOS Science Example Screenshots

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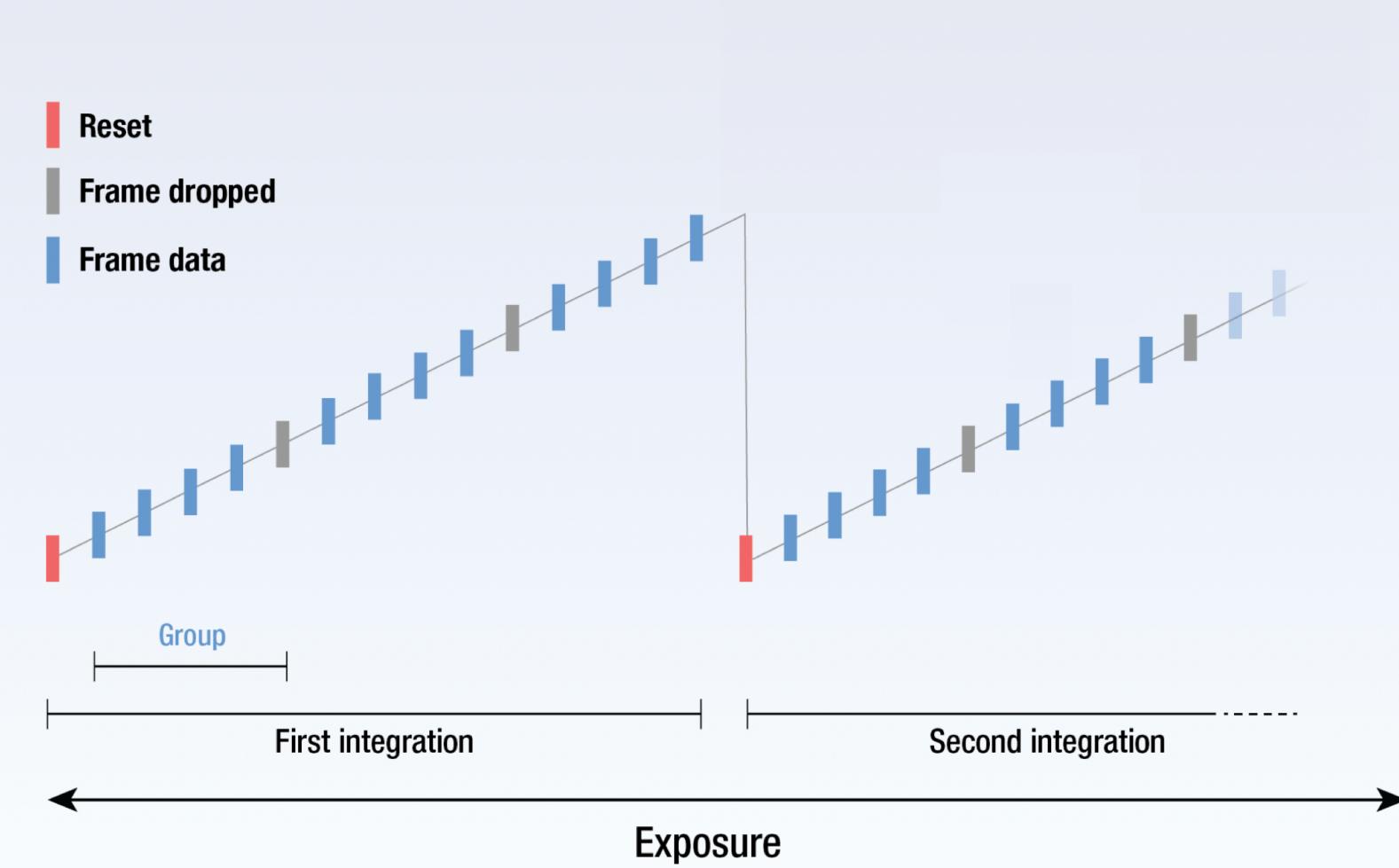
JWST Master Class at STScI

11/18/19 – 11/22/19



# Exposures, Groups and Integrations

## JWST Up-the-ramp Readout





# ETC Screenshots – continuum source

[Calculations](#)[Scenes and Sources](#)[Upload Spectra](#)[Caveats and Limitations](#)

## Select a Scene [?](#)

[★ Default Scene](#)

ID - Name -

Sources

# Calcs -

★ 1 Point source - z=6 galaxy 1

2

☆ 2 Point source - Z=6 emissi 2

3

[New](#)[Add Source](#)[Remove Source](#)[Delete](#)

## Select a Source [?](#)

ID [▼](#)[Plot](#)

Name -

Scenes -

# Calcs - [▲](#)

1



z=6 compact dwarf

1

2

2



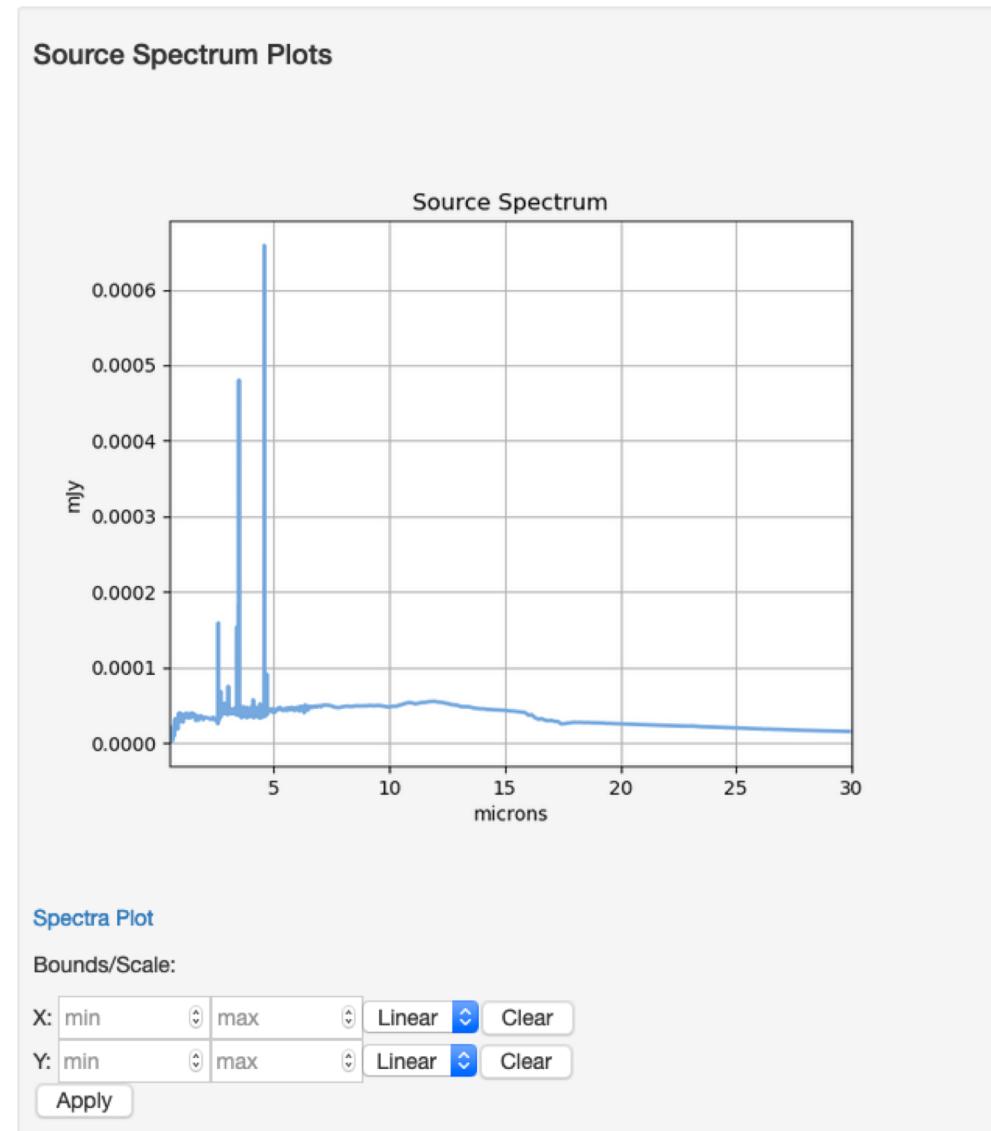
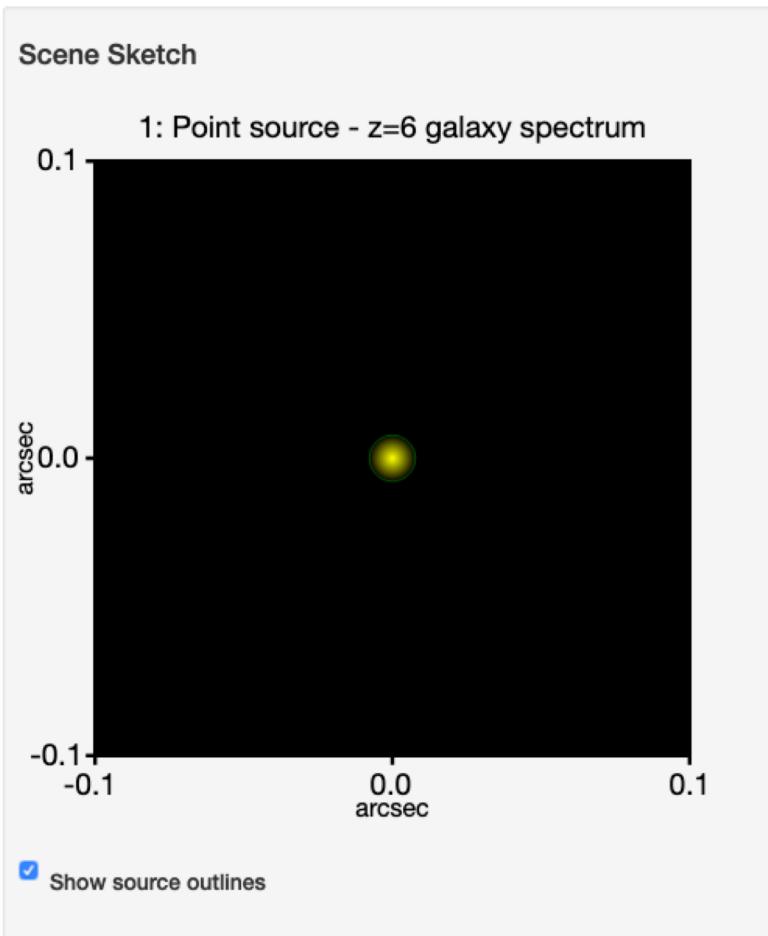
[CIII] + [OII] + Ha at z= 2

3

[New](#)[Delete](#)



## ETC Screenshots – continuum source





# ETC Screenshots – continuum source

Source Editor ⓘ

ID Continuum Renorm Lines Shape Offset

Scene Identity Information

Point source - z=6 galaxy spectrum

Point source with emission lines

Source Identity Information

z=6 compact dwarf

Source selected: 1

Reset Save

Source Editor ⓘ

ID Continuum Renorm Lines Shape Offset

Spectral Energy Distribution Redshift 6

Uploaded File

Select

Galaxy Spectra from Brown et al.

UGCA 219 (Blue Compact Dwarf)

No Continuum

Extinction

Law Milky Way R\_V=3.1

Ext. Magnitude 0

Ext. Bandpass J

Source selected: 1

Reset Save

Source Editor ⓘ

ID Continuum Renorm Lines Shape Offset

Normalize Source Flux Density

Renormalization applied after redshift

Normalize at wavelength

0.001 flam lambda 2 μm

Normalize in bandpass

27.5 abmag

JWST NIRCAM/SW\_IMAGING F150W

HST WFC3/IR F098M

Source selected: 1

Reset Save



# ETC Screenshots – continuum source

**Source Editor** ⓘ

ID Continuum Renorm Lines Shape Offset

Line name  Add Update Remove

Lines applied after redshift and renormalization.

Line center Line width Line strength

10  10000  1e-12

Name - Center - Width - Strength -

Source selected: 1

Reset Save

**Source Editor** ⓘ

ID Continuum Renorm Lines Shape Offset

Shape of source:  Point  Extended

Source selected: 1

Reset Save

**Source Editor** ⓘ

ID Continuum Renorm Lines Shape Offset

Position of Source in Scene

X offset  arcsec

Y offset  arcsec

Orientation  degrees

Source selected: 1

Reset Save



# ETC Screenshots – emission line source

[Calculations](#)[Scenes and Sources](#)[Upload Spectra](#)[Caveats and Limitations](#)

## Select a Scene ?

★ Default Scene

ID - Name -	Sources	# Calcs -
☆ 1 Point source - z=6 galaxy sp 1		2
★ 2 Point source - Z=6 emission 2		3

[New](#)[Add Source](#)[Remove Source](#)[Delete](#)

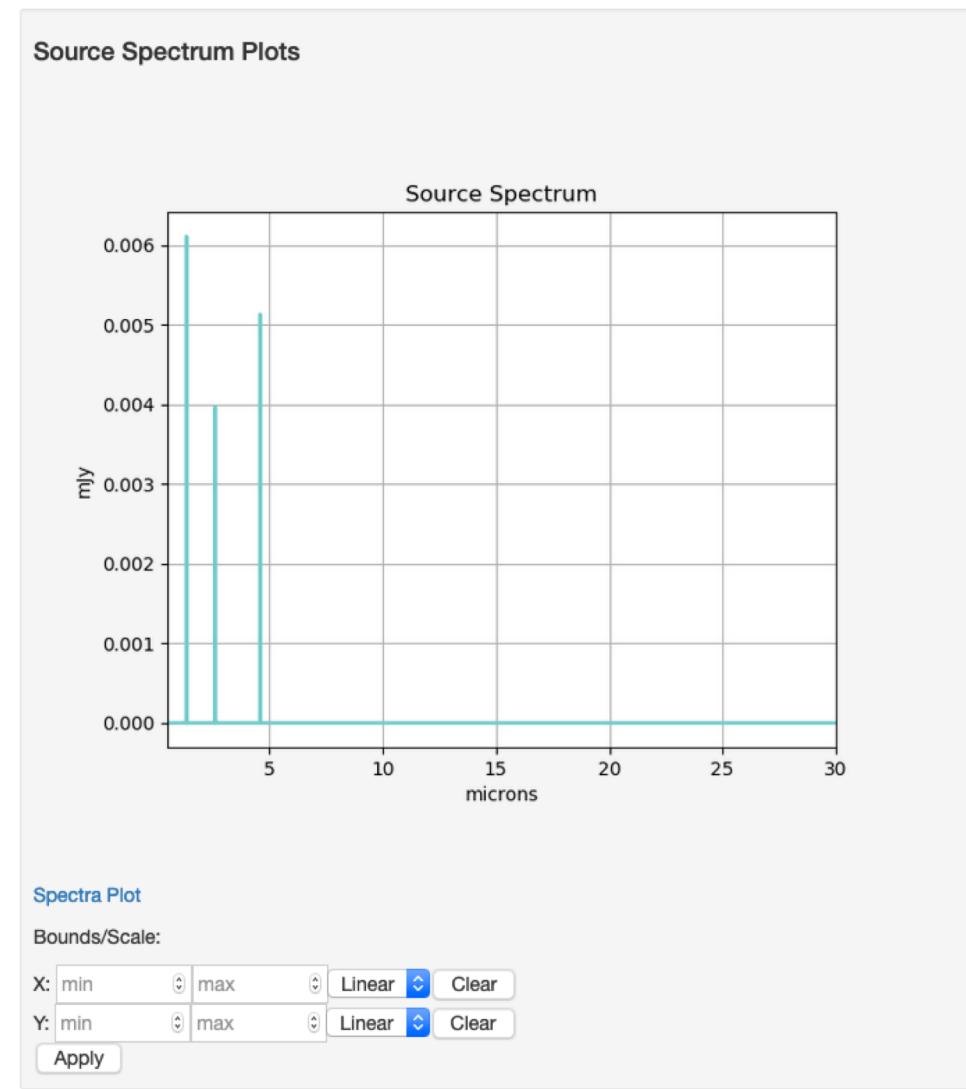
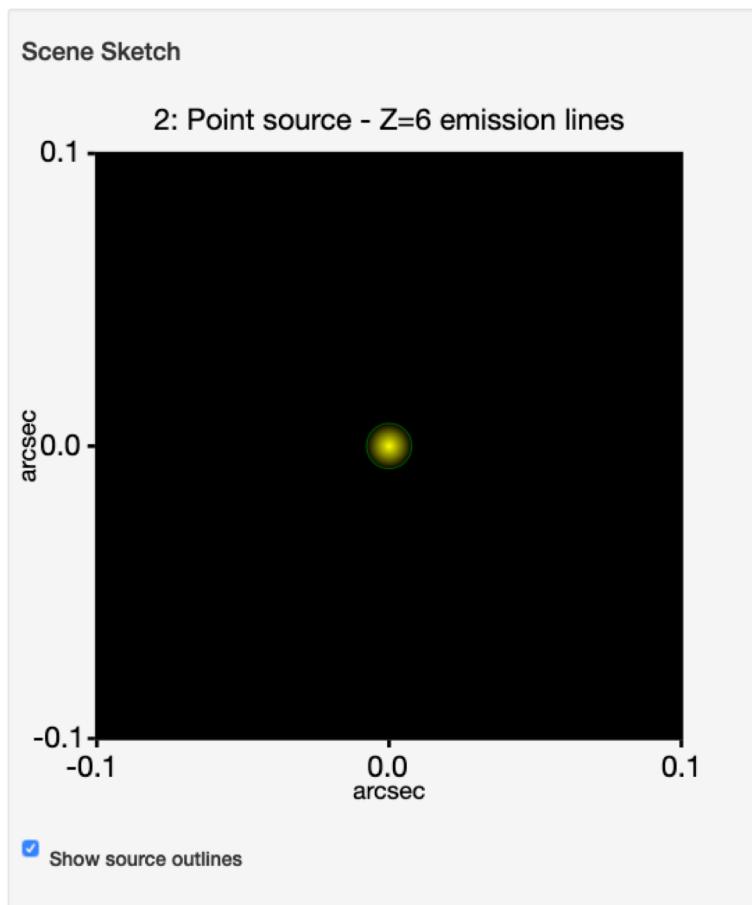
## Select a Source ?

ID	<span style="color: blue;">Plot</span>	Name -	Scenes -	# Calcs -	<span style="color: purple;">▲</span>
1	<input type="checkbox"/>	z=6 compact dwarf	1	2	
2	<input checked="" type="checkbox"/>	[CIII] + [OII] + Ha at z=6	2	3	

[New](#)[Delete](#)



# ETC Screenshots – emission line source





# ETC Screenshots – emission line source

**Source Editor** [?](#)

**Scene Identity Information**

Point source - z=6 emission lines

[CIII + [OII] + Ha]

**Source Identity Information**

[CIII + [OII] + Ha at z=6]

Source selected: 2

**Source Editor** [?](#)

**Spectral Energy Distribution**

Redshift: 0

Uploaded File  
 Select  
 No Continuum

**Extinction**

Law: Milky Way R\_V=3.1

Ext. Magnitude: 0

Ext. Bandpass: J

Source selected: 2

**Source Editor** [?](#)  
Normalize Source Flux Density

Renormalization applied after redshift

Normalize at wavelength  
0.001 flam lambda 2 μm

Normalize in bandpass  
27.5 abmag

JWST NIRCAM/SW\_IMAGING F150W

HST WFC3/IR F098M

Other Bessell J

Do not renormalize

Source selected: 2



# ETC Screenshots – emission line source

**Source Editor** ⓘ

ID Continuum Renorm Lines Shape Offset

**Line name**

My line Add Update Remove

Lines applied after redshift and renormalization.

Line center	Line width	Line strength	
10 <span>μm</span>	10000 <span>km/s</span>	1e-12 <span>erg/cm<sup>2</sup>/s</span>	
Name -	Center -	Width -	Strength -
[C III] at z=6	1.34	40	2.1e-18
[O II] at z=6	2.61	40	7e-19
Hα at z=6	4.59	40	5.15e-19

Source selected: 2 Reset Save

**Source Editor** ⓘ

ID Continuum Renorm Lines Shape Offset

**Shape of source:**  Point  Extended

Source selected: 2 Reset Save

**Source Editor** ⓘ

ID Continuum Renorm Lines Shape Offset

**Position of Source in Scene**

X offset	0 <span>arcsec</span>
Y offset	0 <span>arcsec</span>
Orientation	0 <span>degrees</span>

Source selected: 2 Reset Save



# ETC Screenshots - Calculations

Calculations    Scenes and Sources    Upload Spectra    Caveats and Limitations

MIRI	NIRCam	NIRISS	NIRSpec	?	ID	Mode	$\lambda$	Scn	(s)	SNR	⚠
					5	nirspec target_acq	2.59	1	171.79	7.86	!
					4	nirspec mos	4.59	2	31862.14	11.92	✓
					3	nirspec mos	2.61	2	31862.14	11.21	✓
					2	nirspec mos	1.34	2	31862.14	17.90	✓
					1	nirspec mos	1.16	1	95586.41	12.79	✓
-	-	---			-	---	---	-	---	-	-

Same type of screen shots for computations 4, 3 and 2 (medium spectral resolution configurations F100LP/G140M, F170LP/G235M and F290LP/G395M).

Showing only one of them.



# ETC Screenshots – emission line source scene

Scene ★   [Backgrounds](#)   [Instrument Setup](#)   [Detector Setup](#)   [Strategy](#)

**Scene for Calculation**  
2: Point source - z=6 emission lines

★ Default scene is 2.

**Sources in that Scene**  
2: [CIII] + [OII] + Ha at z=6

ID	Continuum	Renorm	Lines	Shape	Offset

**Line name** My line   [Add](#)   [Update](#)   [Remove](#)

Lines applied after redshift and renormalization.

Line center	Line width	Line strength
10 <span style="float: right;">μm</span>	10000 <span style="float: right;">km/s</span>	1e-12 <span style="float: right;">erg/cm<sup>2</sup>/s</span>

→

Name	Center	Width	Strength
[C III] at z=6	1.34	40	2.1e-18
[O II] at z=6	2.61	40	7e-19
Ha at z=6	4.59	40	5.15e-19

Calculation selected: 4, Mode: nirspect mos   [Reset](#)   [Calculate](#)



# ETC Screenshots – Background

Scene ★ Backgrounds Instrument Setup Detector Setup Strategy

Position ?

Ra Dec	03:32:28.00 -27:48:30.00
--------	--------------------------

Background configuration

None  Low  Medium  High

Date Jul 1 2020

Calculation selected: 4, Mode: nirspect mos

Reset Calculate



# ETC Screenshots – Instrument Setup

Scene ★   Backgrounds   **Instrument Setup**   Detector Setup   Strategy

NIRSpec Multi-Object Spectroscopy

**Grating/Filter Pair**  
G395M/F290LP

**Slitlet Shape**  
3 shutters (-1,0,1)

The source selected in the Strategy tab will be placed in shutter 0.

**MSA Location**  
Quadrant 3 center

These relative directions are when looking through the MSA towards the sky.

Wavelength range: (2.87 - 5.27)

**NIRSPEC MOS G395M F290LP**

The graph displays the total system throughput for the specified instrument setup. The x-axis represents wavelength  $\lambda$  in micrometers ( $\mu\text{m}$ ), ranging from 3.0 to 5.0. The y-axis represents Total System Throughput, ranging from 0.0 to 1.0. The throughput curve starts at approximately 0.3 at 2.87  $\mu\text{m}$ , rises to a peak of about 0.6 at 3.7  $\mu\text{m}$ , and then gradually declines to approximately 0.3 at 5.27  $\mu\text{m}$ .

$\lambda (\mu\text{m})$	Total System Throughput
2.87	0.30
3.0	0.45
3.2	0.55
3.4	0.60
3.6	0.60
3.8	0.60
4.0	0.58
4.2	0.55
4.4	0.50
4.6	0.45
4.8	0.38
5.0	0.40
5.27	0.30

Calculation selected: 4, Mode: nirspect mos

**Reset**   **Calculate**



# ETC Screenshots – Detector Setup

Scene ★   Backgrounds   Instrument Setup   **Detector Setup**   Strategy

**Subarray**   **Readout pattern**

FULL   NRSIRS2

**Groups per integration**   ?   **Integrations per exposure**   **Exposures per specification**

18   1   24

**Total exposure time:** 08:51:02 (31862.14 s)

**Total integrations:** 24

Calculation selected: 4, Mode: nirspect mos

**Reset**   **Calculate**



# ETC Screenshots - Strategy

Scene ★      Backgrounds      Instrument Setup      Detector Setup      **Strategy**

MSA Full Shutter Extraction

Centered on source

2: [CIII] + [OII] + Ha at z=6

X, Y: 0,0 arcsec

Angular units

arcsec

Source offset from shutter center

X 0 arcsec  
(0.00 fractional shutters)

Y 0 arcsec  
(0.00 fractional shutters)

Perform Background Subtraction Using

background region

noiseless sky background

Wavelength of Interest (2.87 - 5.27)

4.59 microns

Calculation selected: 4, Mode: nirspect mos

Reset      Calculate



# ETC Screenshots - Calculations

Calculations    Scenes and Sources    Upload Spectra    Caveats and Limitations

ID	Mode	$\lambda$	Scn	(s)	SNR	⚠
5	nirspec target_acq	2.59	1	171.79	7.86	!
4	nirspec mos	4.59	2	31862.14	11.92	✓
3	nirspec mos	2.61	2	31862.14	11.21	✓
2	nirspec mos	1.34	2	31862.14	17.90	✓
1	nirspec mos	1.16	1	95586.41	12.79	✓
-	-	---	-	---	-	-

CLEAR/PRISM



# ETC Screenshots – emission line source scene

Scene ★      Backgrounds      Instrument Setup      Detector Setup      Strategy

**Scene for Calculation**  
1: Point source - z=6 galaxy spectrum  
★ Default scene is 2.

**Sources in that Scene**  
1: z=6 compact dwarf

① →

ID	Continuum	Renorm	Lines	Shape	Offset
Line name: My line					
Line center: 10 μm					
Line width: 10000 km/s					
Line strength: 1e-12 erg/cm <sup>2</sup> /s					
Name -	Center -	Width -	Strength -		

Lines applied after redshift and renormalization.

Calculation selected: 1, Mode: nrspec mos

Reset      Calculate



# ETC Screenshots - Background

Scene ★ Backgrounds Instrument Setup Detector Setup Strategy

Position ?

Ra Dec	03:32:28.00 -27:48:30.00
--------	--------------------------

Background configuration

None  Low  Medium  High

Date Jul 1 2020

Calculation selected: 1, Mode: nirspect mos Reset Calculate



# ETC Screenshots – Instrument Setup

Scene ★   Backgrounds   **Instrument Setup**   Detector Setup   Strategy

NIRSpec Multi-Object Spectroscopy

**Grating/Filter Pair**  
Prism/CLEAR

**Slitlet Shape**  
3 shutters (-1,0,1)

The source selected in the Strategy tab will be placed in shutter 0.

**MSA Location**  
Quadrant 3 center

These relative directions are when looking through the MSA towards the sky.

Wavelength range: (0.6 - 5.3)

Calculation selected: 1, Mode: nirspect mos

**NIRSPEC MOS PRISM CLEAR**

Wavelength ( $\lambda$ ) ( $\mu\text{m}$ )	Total System Throughput
0.6	0.15
0.8	0.35
1.0	0.45
1.1	0.55
1.5	0.48
2.0	0.48
2.5	0.55
3.0	0.58
3.5	0.60
4.0	0.62
4.5	0.60
5.0	0.58
5.3	0.45

Reset   Calculate



# ETC Screenshots – Detector Setup

Scene ★   Backgrounds   Instrument Setup   **Detector Setup**   Strategy

**Subarray**   **Readout pattern**

FULL   NRSIRS2

**Groups per integration**   ?   **Integrations per exposure**   **Exposures per specification**

18   1   72

**Total exposure time:** 1d 02:33:06 (95586.41 s)

**Total integrations:** 72

Calculation selected: 1, Mode: nrspec mos

**Reset**   **Calculate**



# ETC Screenshots - Strategy

Scene ★      [Backgrounds](#)      [Instrument Setup](#)      [Detector Setup](#)      **Strategy**

MSA Full Shutter Extraction

**Centered on source**

1: z=6 compact dwarf

X, Y: 0,0 arcsec

**Source offset from shutter center**

X 0 arcsec  
(0.00 fractional shutters)

Y 0 arcsec  
(0.00 fractional shutters)

**Wavelength of Interest** (0.6 - 5.3)

1.15 microns

Angular units

arcsec

**Perform Background Subtraction Using**

background region

noiseless sky background

Calculation selected: 1, Mode: nirspect mos

**Reset** **Calculate**



# ETC Screenshots - Calculations

Calculations    Scenes and Sources    Upload Spectra    Caveats and Limitations

MIRI ▾    NIRCam ▾    NIRISS ▾    NIRSpec ▾    ?

ID ▾	⌚	Mode -	λ -	Scn -	(s) -	SNR -	⚠
5	<input checked="" type="checkbox"/>	nirspec target_acq	2.59	1	171.79	7.86	!
4	<input type="checkbox"/>	nirspec mos	4.59	2	31862.14	11.92	✓
3	<input type="checkbox"/>	nirspec mos	2.61	2	31862.14	11.21	✓
2	<input type="checkbox"/>	nirspec mos	1.34	2	31862.14	17.90	✓
1	<input type="checkbox"/>	nirspec mos	1.16	1	95586.41	12.79	✓
-	-	---	---	-	--,-	--,-	-

MSA Target Acquisition



# ETC Screenshots - Continuum source scene

Scene ★ Backgrounds Instrument Setup Detector Setup Strategy

**Scene for Calculation**

1: Point source - z=6 galaxy spectra  
★ Default scene is 2.

ID	Continuum	Renorm	Lines	Shape	Offset

**Spectral Energy Distribution**

Uploaded File  
 Select  
Galaxy Spectra from Brown et al.  
UGCA 219 (Blue Compact Dwarf)

**Redshift** 6

**Sources in that Scene**

1: z=6 compact dwarf

**Extinction**

Law Milky Way R\_V=3.1

Ext. Magnitude 0

Ext. Bandpass J

No Continuum

Calculation selected: 5, Mode: nirspect target\_acq

Reset Calculate



# ETC Screenshots - Background

Scene ★ Backgrounds Instrument Setup Detector Setup Strategy

Position ?

Ra Dec 03:32:28.00 -27:48:30.00

Background configuration

None  Low  Medium  High

Date Jul 1 2020

Calculation selected: 5, Mode: nirspect target\_acq Reset Calculate



# ETC Screenshots – Instrument Setup

Scene ★   Backgrounds   **Instrument Setup**   Detector Setup   Strategy

NIRSpec Target Aquisition

Acq Mode  
MSATA (Single Object)

Filter  
CLEAR

NIRSPEC TARGET ACQUISITION MSA SHUTTER CLEAR

Total System Throughput

$\lambda$  ( $\mu$ m)

$\lambda$ ( $\mu$ m)	Total System Throughput
0.5	0.20
1.0	0.45
1.2	0.60
1.8	0.55
3.0	0.68
4.0	0.70
5.0	0.65
5.5	0.55

Calculation selected: 5, Mode: nirspect target\_acq

Reset   Calculate



# ETC Screenshots – Detector Setup

Scene ★   Backgrounds   Instrument Setup   **Detector Setup**   Strategy

**Subarray**  
FULL

**Readout pattern**  
NRSRAPIDD6

**Groups** ?  
3

**Integrations**  
1

**Exposures**  
1

Total exposure time: 00:02:52 (171.79 s)

Total integrations: 1

Calculation selected: 5, Mode: nirspectarget\_acq

**Reset**   **Calculate**



# ETC Screenshots - Strategy

Scene ★      Backgrounds      Instrument Setup      Detector Setup      **Strategy**

Target Acquisition

Aperture centered on source

1: z=6 compact dwarf

X, Y: 0,0 arcsec

Calculation selected: 5, Mode: nirspect target\_acq

**Reset**    **Calculate**



# APT Screenshots – JWST Proposal and Catalog Target

Astronomer's Proposal Tools Version 27.3 mpt-demo (Thu Jul 25 2019) JWST PRD: PRDOPSSOC-L-023

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

New Document New HST Proposal New JWST Proposal

## Astronomer's Proposal Tools

Version 27.3 mpt-demo (Thu Jul 25 2019) JWST PRD: PRDOPSSOC-L-023

- Copyright 2002 – 2007 United States Government and the National Aeronautics and Space Administration. All Rights Reserved.
- This software has made use of the Aladin Sky Atlas developed at the *Centre de Données astronomiques de Strasbourg* (<http://cdsweb.u-strasbg.fr/>)
- This software has made use of the SIMBAD database developed at the CDS, Strasbourg, France.
- This software has made use of the NASA/IPAC Extragalactic Database (NED) which is operated by the Jet Propulsion Laboratory, California Institute of Technology, under contract with the National Aeronautics and Space Administration.
- This software uses portions of the JSky library which are provided by the European Southern Observatory.
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- This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>).

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Astronomer's Proposal Tools Version 27.3 mpt-demo (Thu Jul 25 2019) JWST PRD: PRDOPSSOC-L-023 - JWST Draft Proposal (Unsaved)

Form Editor Spreadsheet Editor MSA Planning Tool Orbit Planner Visit Planner Timeline View in Aladin BOT Target Confirmation PDF Preview Submission Run All Tools Stop

New JWST Proposal New

What's New Roadmap Feedback

**JWST Draft Proposal (Unsaved)**

- Proposal Information
- Proposal Description
- Team Expertise
- Unnamed PI
- Unnamed Col

**Targets**

- Fixed Target Resolver Resolve a target name or position
- New Fixed Target Create a new Fixed Target
- New Target Group Create a new Target Group
- New Solar System Target Create a new Solar System Target
- New Generic Target Create a new Generic Target

Import MSA Source Catalog... Import a source catalog to use in MSA Planning

Import Targets... Import Fixed Targets from whitespace, CSV, TSV, or VOTable

Edit Unnamed Col ← New → Edit Observations

9 errors & warnings (Click for Details)



## APT Screenshots - The structure of the observation

Table shows number of integrations or exposures needed for each

	Dither position #1	Dither position #2	Dither position #3	CLEAR/PRISM	F100LP/G140M	F170LP/G235M	F290LP/G395M
Nod position #1a				8	3	3	3
Nod position #1b				8	3	3	3
Nod position #1c				8	3	3	3
Nod position #2a				8	3	3	3
Nod position #2b				8	3	3	3
Nod position #2c				8	3	3	3
Nod position #3a				8	2	2	2
Nod position #3b				8	2	2	2
Nod position #3b				8	2	2	2



# APT Screenshots

## MSA Catalog Target Input for MPT

Astronomer's Proposal Tools Version 2020.1 mpt-demo (Fri Nov 01 2019) - JWST Draft Proposal (Unsaved)

Run All Tools Stop What's New Roadmap Feedback

New JWST Proposal Import MSA Source Catalog...

Create and review plans for the NIRSpec MSA 363

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

JWST Draft Proposal (Unsaved)

Proposal Information Targets MSA Catalogs 1 HUDF Observations Observation Links

1 HUDF of JWST Draft Proposal (Unsaved)

Number: 1  
Name in the Proposal: HUDF (unique within proposal)  
Name for the Archive: HUDF (standard resolvable name)

Candidate Sets Comments

HUDF (9969 sources) Astrometric Accuracy (mas): 15  
Reference Position RA: 03 32 38.9682 Dec: -27 47 26.86

Pre-Image Availability Is already obtained

ID	RA	DEC	Size	Redshift	Reference	Stellarity	MAG_F160W	NRS_F110W	NRS_F140X	NRS_CLEAR	Weight
514	03 32 42.0738	-27 49 11.61	0	5.581	Yes	0.91	22.46	22.741	-99	22.46	300
2639	03 32 42.7132	-27 48 11.80	0	5.66	Yes	0.81	99	29.631	-99	99	300
7894	03 32 39.8783	-27 45 51.42	0	6.45	Yes	0.81	29.284	29.126	28.984	29.284	300
3352	03 32 36.5666	-27 47 58.52	0	5.6	Yes	0.74	29.388	29.536	29.97	29.388	300
10101	03 32 43.4957	-27 46 53.32	0	5.59	Yes	0.74	28.977	28.965	29.15	28.977	300
4166	03 32 39.7497	-27 47 45.14	0	6.743	Yes	0.73	28.733	28.904	28.826	28.733	300
6093	03 32 32.2255	-27 47 37.90	0	5.63	Yes	0.73	30.681	30.137	30.707	30.681	300
7740	03 32 38.4014	-27 45 48.58	0	6.29	Yes	0.73	29.364	28.9	29.142	29.364	300
9976	03 32 34.5673	-27 46 49.30	0	6.74	Yes	0.73	29.263	29.557	29.012	29.263	300
3740	03 32 38.5297	-27 47 51.87	0	7.23	Yes	0.71	29.213	29.187	28.92	29.213	300
10586	03 32 33.3618	-27 47 22.34	0	6.04	Yes	0.71	29.582	29.489	29.477	29.582	300
615	03 32 38.0159	-27 49 8.39	0	5.651	Yes	0.7	24.087	24.614	-99	24.087	300
8694	03 32 40.9079	-27 46 28.50	0	5.73	Yes	0.7	29.424	29.433	29.738	29.424	300
2032	03 32 34.1404	-27 48 24.35	0	5.686	Yes	0.69	29.2	28.266	-99	29.2	300
6456	03 32 38.7694	-27 47 10.52	0	6.528	Yes	0.69	29.181	28.868	29.163	29.181	300
7919	03 32 40.0312	-27 45 51.75	0	6.42	Yes	0.68	29.013	28.712	28.911	29.013	300
4567	03 32 30.8886	-27 47 12.86	0	5.66	Yes	0.67	99	27.561	-99	99	300
7988	03 32 39.3228	-27 45 53.23	0	5.89	Yes	0.66	28.148	27.844	28.092	28.148	300
5914	03 32 38.4375	-27 47 35.48	0	6.09	Yes	0.64	29.424	29.482	29.47	29.424	300
20309	03 32 40.0600	-27 49 7.50	0	6.526	Yes	0.63	27.564	27.925	-99	27.564	300

Fixed Target: Equatorial Number Name Archive Name Comments

Show: Fixed Target: Equatorial

1 HUDF 1 HUDF 1 HUDF 1 HUDF

10 errors & warnings (Click for Details)



# APT Screenshots

## MSA Planning Tool Planner

Astronomer's Proposal Tools Version 2020.1 mpt-demo (Fri Nov 01 2019) - JWST Draft Proposal (Unsaved)

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

New JWST Proposal Import MSA Source Catalog...

JWST Draft Proposal (Unsaved)  
Proposal Information  
Targets  
MSA Catalogs  
HUDF (1 source)  
Observations  
Observation Links

Planner Plans

Candidate Lists  
Primary Candidate List: HUDF (9969 sources)  
Filler Candidate List: None Selected

Plan Angle  
Planned  
Aperture PA: 135.0 Degrees

Slit Setup  
Slit: 3 Shutter Slit  
Entire Open Shutter Area  
Source Centering Constraint

Pointing Setup  
Nod in slit: 3 exposures per configuration.  
Dither Type: Fixed Dither  
Short dithers recommended  
Dispersion (shutters): 1 (5), 2 (0)  
Cross-Dispersion (shutters): 0 (5)  
Pattern:  
Add Insert Above Remove

Exposure Setup  
Grating/Filter: G140M/F100LP, G235H/F170LP, G235M/F170LP, G395H/F290LP, G395M/F290LP, PRISM/CLEAR  
Multiple Sources Per Row

Search Grid  
Search Area Dimensions:  
Center RA: 03 32 39.0067 Dec: -27 47 29.39  
Width: 40 Arcseconds  
Height: 40 Arcseconds  
Search Step Size: 3.0 Arcseconds. 225 pointings will be tested.

Parameters  
 Use Weights Use number of targets for quality assessment.  
 Enable Monte-Carlo

Fixed Target: Equatorial	Number	Name	Archive Name	Comments
HUDF	1	1	1	Show: Fixed Target: Equatorial

10 errors & warnings (Click for Details)

Run All Tools Stop Feedback

What's New Roadmap Feedback



# APT Screenshots – Planner parameters

**Search Grid**

Search Area Dimensions:

Center RA:	03 32 39.0067	Dec:	-27 47 29.39
Width	40	Arcseconds	
Height	40	Arcseconds	
Search Step Size	3.0	Arcseconds.	225 pointings will be tested.

**Parameters**

Use Weights      Use number of targets for quality assessment.

Enable Monte-Carlo

Number of configurations  Enter N\*3 for N target sets.  
If 'Number of configurations' is empty, tool will continue until all primary candidates are planned, or no more can be added to the plan.

**Plan**

Plan Name

3 configurations per target set  exposures per configuration.



# APT Screenshots – Exposure specifications in the observation

**Science Parameters**

This observation was created from plan: *hufd\_PRISM+MRES\_step3*

Primary Candidate List: HUDF (9969 sources)

Filler Candidate List: None Selected

Aperture PA: 135.0 Degrees

Science Aperture: MSA Center

Status: Planning

**Exposure Specification**

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Autocal	ETC Wkbk.Calc ID	ETC
1	G140M/F100LP	NRSIRS2	18	3	NONE		
2	G235M/F170LP	NRSIRS2	18	3	NONE		
3	G395M/F290LP	NRSIRS2	18	3	NONE		
4	PRISM/CLEAR	NRSIRS2	18	4	NONE		

Add Duplicate Insert Above Remove

**Configurations/Pointings**

#	MSA Config...	Exposure ...	Nod Pattern	Pointing	Dispersion Offset (Shutters)	Cross-Dispersion Offset (Shutter)	Total Dithers	Total Integrations	Total Exposure	Edit Config
1	c1	1 (G140M...)	3 Shutter ...	03 32 38...			3	9	11948.301	Edit
2	c1	2 (G235M...)	3 Shutter ...	03 32 38...			3	9	11948.301	Edit
3	c1	3 (G395M...)	3 Shutter ...	03 32 38...			3	9	11948.301	Edit
4	c1	4 (PRISM/...)	3 Shutter ...	03 32 38...			3	12	15931.068	Edit
5	c1	4 (PRISM/...)	3 Shutter ...	03 32 38...			3	12	15931.068	Edit
6	c2	1 (G140M...)	3 Shutter ...	03 32 38...			3	9	11948.301	Edit
7	c2	2 (G235M...)	3 Shutter ...	03 32 38...			3	9	11948.301	Edit
8	c2	3 (G395M...)	3 Shutter ...	03 32 38...			3	9	11948.301	Edit

Add Import Configuration(s) Duplicate Insert Above Remove

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The background of the image is a deep, dark space filled with numerous small, white stars of varying sizes. In the center, there is a prominent, large nebula. This nebula is composed of wispy, translucent clouds of gas and dust that are illuminated from within, showing a vibrant palette of colors including shades of blue, green, yellow, orange, and red. The nebula's structure is complex, with many loops and dense clusters of gas.

**EXPANDING THE FRONTIERS OF SPACE ASTRONOMY**