

2024-03-06 TSO CT Meeting notes

Date

06 Mar 2024

Attendees

- [Aarynn Carter](#)
- [Brian Brooks](#)
- [Everett Schlawin](#)
- [Leonardo Ubeda](#)
- [Michael Regan](#)
- [Nestor Espinoza](#)
- [Nikolay Nikolov](#)
- [Sarah Kendrew](#)

Meeting agenda:

- News & Announcements (all).
- Past and future TSO observations (Nikolov).
- NIRCcam/DHS updates (Espinoza, Nikolov).
- Possible specifications SUBSTRIPE/SUPERSTRIPE for TSOs (Espinoza, all).
- Instrument roundtable check-in (all)
- Closing remarks.



Slides:

Discussion items

Time	Item	Who	Notes
10min	News & Announcements	All	<ul style="list-style-type: none">• Welcome to Aarynn Carter, a new member of the JWST NIRISS and TSO CT teams.• Sarah Kendrew mentions plans to make the TA optional for MIRI LRS. In addition, the MIRI team has the MCOR noise suppression for subarrays finally pushed.• Everett Schlawin asks if the introduction of a slit to LRS implies no shadow region effect. Sarah Kendrew confirms that the shadow effect will be gone when using MIRI with a the slit. Right now, the slit only allows FULL array readout, so the dynamic range is limited compared to the case where the a subarray is used in slitless mode.

10min	Past and future TSO observations	Nikolay Nikolov	<ul style="list-style-type: none"> Nikolay Nikolov presents planned and past TSOs. Most used mode is NIRSpec BOTS, followed by MIRI Imaging and LERS, NIRISS SOSS and NIRCам Grism Time Series. Most observed objects are transiting exoplanets (transits and eclipses), monitoring of variability in Brown Dwarfs, ISM and variability in a black hole. Michael Regan asks why ISM is observed in the TSO mode, as one can obtain high SNR in multi-dithered exposure, and the analysis by the pipeline is much easier that way. Nestor Espinoza mentions that we will check with the PI and encourage them to use multi-dithered data.
10min	NIRCам /DHS updates	Nestor Espinoza Nikolay Nikolov All	<ul style="list-style-type: none"> Nestor Espinoza presents an introduction to the DHS mode for NIRCам and points out that Everett Schlawin will be leading a tiger team to analyze data from relevant calibration program PID 4453. Data is expected in the coming days. Everett Schlawin mentions that the team welcomes more expertise including, optical/wavefront expertise. Michael Regan mentions that the DHS mode has not been designed for science, but rather an engineering capability for the alignment of the segments. However, the unique readout modes present opportunities for enhancing data collection.
25min	Possible specifications SUBSTRIPE /SUPERS TRIPE for TSOs	Nestor Espinoza	<ul style="list-style-type: none"> Nestor Espinoza continues talk on SUBSTRIPE and SUPERSTRIPE readout patterns as the next steps in improving TSOs. This mode was developed following the need to efficiently read the ten NIRCам DHS spectra. Instead of reading the entire array, the SUBSTRIPE mode allows one to read each of the spectra separately and skip the detector portion between the spectra. This saves makes it possible to have short exposures and reduces the data volume collected from each integration. The arriving question is "What else can these modes do for TSOs on all of the JWST instruments?" Nestor Espinoza mentions that for NIRISS mode, one can read the stripes in the slow readout direction, uphill and downhill by reading small portions of the detectors; one can read extremely fast; the smaller the the stripes the faster the readout, and subsequently the shorter the time the detector is exposed to the source; Nestor Espinoza call this step "Fast and Furious"; Nestor Espinoza mentions that discussing with Nikolay Nikolov, there is an interesting idea for NIRSpec; there is saturation from 0.9 to 1.6um for many exoplanets, and users report seeing systematic errors in the affected data. The PRISM has large peak at about 1.1um and this is where the saturation occurs first. There is the idea to combine several SUBSTRIPE regions, covering the low and high throughputs accordingly and effectively reduce the exposure time on the highest throughput portions. This can further be improved for separate spectral types and results in so called "flattened spectra" i.e., relatively flat flux throughout the entire wavelength region of the PRISM providing similar SNRs; Sarah Kendrew raises the question if this mode can be applied to the MIRI detectors? Michael Regan elaborates that this is not possible for MIRI owing to differences in the detector code. Everett Schlawin mentions that incorporating more reference pixels with this mode could be good for improving data analysis and removing 1/f noise. Nestor Espinoza discusses that the SUBSTRIPE mode is currently defined with 5-parameters (all this information has been detailed in Eddie Bergeron's presentation). The parameters are: <ul style="list-style-type: none"> a. Reads1 b. Skips1 number of rows to skip c. Reads2 d. Skips2 e. Superstripes numbers of rows to skip
5min	<ul style="list-style-type: none"> Instrument roundtable check-in 	All	<ul style="list-style-type: none"> Sarah Kendrew mentions that the TA will be optional for MIRI Michael Regan investigated a micrometeorite activity and concluded that there is up to 2sec out-of-synch in the time stamps of the individual instruments. Only NIRCам SW and LW channels appear to be well in synch, but not Module A and Module B. Nestor Espinoza reports that the SOSS team is implementing the 'pasta soss' algorithm, which traces orders 1 and 2 to correct for displacements caused by the rotation of the filter wheel. Aarynn Carter mentions an ongoing work on systematic errors in SOSS TSOs. Nestor Espinoza mentions effort to make the FGS data automatically available to each TSO observation, because this data is highly-complementary for the analysis of the science exposures. Nikolay Nikolov mentions that BOTS zodiacal background program has been continued and data from C2 is coming soon for analysis. He mentions steps in the STScI pipeline parameters that can be made to enable quick production of useful stage3 products for the JWQL.

Action items

