

2023-11-01 TSO WG Meeting notes

Date

01 Nov 2023

Attendees

- [Loic Albert](#)
- [Rosa Diaz](#)
- [Sarah Kendrew](#)
- [Elena Manjavacas](#)
- [Nikolay Nikolov](#)
- [Michael Regan](#)
- [Everett Schlawin](#)
- [Leonardo Ubeda](#)

Apologies:

- [Brian Brooks](#)
- [Nestor Espinoza](#)
- [Unknown User \(birkmann\)](#)

Meeting Agenda

- News & Announcements (all)
- Previous and upcoming TSO observations (Nikolov)
- Instrument roundtable check-in (all)

Discussion items

Time	Item	Who	Notes
5min	News & Announcements	All	
10min	Previous and upcoming TSO observations	Nikolay Nikolov	Discussed archived observations over the last two weeks: 6 TSOs of 5 transiting exoplanets with the most used modes BOTS (4) and SOSS (2). For the upcoming two weeks there are 11 observations of 6 transiting exoplanets and 1 brown dwarf with the use of BOTS (7) and SOSS (4).

45min	Instrument roundtable check-in	All	NIRSpec. Nikolay Nikolov mentions tests on pipeline, instrument reviews and JDox updates. Leonardo Ubeda discusses report on two projects. In the first, he is looking at mnemonics from the EDB to search for correlations of the visit-long-slope seen in NRS2 for BOTS and mnemonics. A long list has been established with the temperature-related mnemonics given a priority for search. Leonardo Ubeda also mentions progress on a TR on non-linearity study using WASP-121 data PID 1729. MIRI. Sarah Kendrew mentions that ESA is hosting a Webinar in December and would like to present BOTS notebook on using the pipeline and asks the TSO WG to help, if possible with such notebooks to be adapted. MIRI has several Trappist-1 observations upcoming, including a phase curve. The team is working with external teams to put a calibration program to look at slit observation of a TSO to check the quality of LRS with a slit. The expectation is to have much better performance of the slit data owing to the reduced background in combination with the excellent JWST pointing and guiding performance (for a suitable target). For fainter targets, the expectation is to achieve much higher SNR when compared to the slitless mode. NIRCam. Nikolay Nikolov mentions an update from Brian Brooks that NIRCam is working on an update of the bad pixel mask for the TA of imaging TSOs to be ready for the March OSS build. The team will also be starting to prioritize Cycle 4 items in the coming weeks, where DHS will naturally be a topic of discussion. Everett Schlawin Raises the question if someone from the TSO WG has looked at the visit-to-visit stability on individual instruments to check if JWST pointing returns the PSFs to the same pixel for the same target, and that it would be useful for the community to have this information. Nikolay Nikolov complements that with the BOTS and SOSS modes accumulating significant amounts of data, appropriate data sets of the same target are available. Michael Regan makes the important clarification that data sets for which TA offset is used make a separate category to look at, owing to different roll angles. He mentions that for non-offset targets the pointing is much better than expected. NIRISS. Loic Albert mentions multiple NIRISS observations have taken place, or are upcoming for Trappist1, which would provide the needed data to look for stability on a list-by-visit basis. He expects variations owing to the fact that the filter wheel position varies from visit-to-visit. He also discusses that the biggest issue some communities are seeing with JWST data is related to charge migration. Investigations are underway as external teams and STScI, and some preliminary results point out toward establishing much lower fluency level for TSOs of <~50% full well. Loic Albert mentions that in one of the studies, the entire portion of the detector that is illuminated by the spectrum of a transiting exoplanet host star has been used to produce per pixel transit depth. The pixels with high fluency show significant variation of the transit depth, and this is considered a result of the impact of charge migration. Nikolay Nikolov asks if in that study the pixels that do not reach high fluency levels produce the same variation, or even no variation. Loic Albert clarifies that he will look with the researcher who works on this to find out. Michael Regan makes the comment that charge migration is always there, it just decreases at lower fluencies, but it is always present. Loic Albert mentions that several researchers work on modeling charge migration using Gaussian Process Regression and correct for it with the results showing significant improvement on light curve scatter and reduced variation on transit depths. He also mentions that Amelie Gressier from STScI works on such a project with Nestor Espinoza. Michael Regan mentions that the problem of charge migration can be mitigated for future missions by making the spectra more oversampled, instead of under sampled as is the case for NIRISS. In this way, the contrast of the brightest and faintest areas of the spectra would be reduced. For the upcoming weeks, the NIRIS IDT team will also be looking at optimized methods for performing spectral extraction. Michael Regan brings the attention of Loic Albert to the new jump detection algorithm for large number of groups and suggests that it may provide improved quality products on the NIRISS data, as well as any mode. Elena Manjavacas mentions that the STScI pipeline takes long time to complete processing of stage one TSO observation of a Brown Dwarf. Michael Regan suggests that the multiprocessing is used for both the jump detection step as well as for the ramp fitting. In particular, the use of half of the cores makes a significant difference. He also mentions that laptop processors are faster than the processors of servers, where the approach is to use multiple, but generally slow processors, instead of a single fast processor. Elena Manjavacas mentions that the problem of data processing can be a community issue and Sarah Kendrew mentions that this has been brought on a JSTUC meeting. Michael Regan mentions that we just need to let the community know that multiprocessing can be used on STScI pipeline very easy.
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Action items

