2018-01-25 TrEx WG Meeting notes

Date

25 Jan 2018

Attendees

- Kevin Stevenson
- Unknown User (birkmann)
- John Stansberry
- Bryan Hilbert
- Nikole Lewis
- Sarah Kendrew
- Jonathan Fraine
- Online attendees

Acronyms

- TA = target acquisition
- TSO = time-series observations
- FoV = field of view
- ETC = JWST exposure time calculator
- WATA = wide-angle target acquisition

Discussion items

Time	Item	Who	Notes

	General Update	Kevin	• See slides titled "TrExWG-2018-01.pdf"
			• TA was recently brought up as a concern for TSOs of bright targets and how STScI would handle proposals/targets for which TA was not feasible
			• WG performed study of TA limits for all four instruments
			  ◦ NIRISS: no concerns, can always perform TA on science target
			  ◦ NIRCam: can achieve 0.1 pixel pointing accuracy with 4 partially and 1 fully saturated pixels (K = 6.1), brighter objects may need to use offset TA or saturate additional pixels with a decrease in pointing accuracy (~1 pixel)
			  ◦ NIRSpec: most objects will need to use offset TA, but brightness range is 11 < K < 25 therefore finding a suitable offset target should not be an issue
			  ◦ MIRI LRS: no concerns with LRS mode, can always perform TA on science target
			  ◦ MIRI Photometry: no TA for MIRI photometry, blind pointing accuracy (4 pixels at 1 sigma) is well within FoV for smallest subarray (SUB64)
			• Conclusion from TA study is that all science targets should have a viable means to perform TA
			• Potential improvements for Cycle 2
			  ◦ Narrow filter for NIRCam, fewer groups for NIRSpec, improved TA on saturated targets (software), micro-shutter assembly TA for NIRSpec
			• Other highlights include...
			  ◦ MIRI TSO photometry enabled for Cycle 1, includes full array and all subarray modes
			  ◦ Developed strategy to provide timestamps for each integration since time is recorded once every science (full frame) image, will create FITS extension with BJD_TDB times
			  ◦ Finalized "chunking" strategy for large datasets, exposures will be evenly divided into segments of <= 2 GB each; will enable faster processing of data and easier sharing on MAST
			• Everyone should update their local version of PandExo

	NIRCam TA with saturated pixels	Bryan	• See slides titled "TA_with_saturated_pix.pdf" • Tested TA accuracy for various levels of saturation with NICam • Range: K = 3.3 - 7.3 in 0.5 mag intervals • Pixel scale = 0.065/pix • Fully saturated: saturates in Group 1 • Partially saturated: saturates in Group 2 or 3 • Can achieve <1 pixel pointing accuracy with up to 8 fully saturated pixels (K~3.5) • The "desirement" is for 0.1 pixel TA accuracy, which is possible without saturating any pixels, but we cannot specify a requirement until we're on sky and can evaluate the impact of systematics • Proposers should evaluate how their science goals might be impacted by reduced (~1 pixel) TA accuracy for very bright targets before determining their preferred TA strategy (offset vs saturation)

	ETC vs PandExo	Jonathan	• See slides titled "Comparisons_between_Pandeia_and_PandExo.pdf" • ETC and PandExo produce consistent results (SNR) when the # of integrations is 1 • ETC produces a significantly lower SNR (compared to PandExo) when the # of integrations is large • The is because the ETC includes the flat field uncertainty for every integration, which is correct for non-TSO data, whereas TSOs are a relative measurement that don't depend on a precise flat fielding, so long as the pointing jitter is small • ETC and PandExo do agree when we use the ETC SNR for 1 integration and then bin down assuming "root N" statistics • **CONCLUSION**: We should encourage people to use PandExo for their TSO planning

	APT	Sarah	• See slides titled "jan18_updates.pdf"
			• APT has gone through a series of updates over the past few months
			  ◦ NIRCam: max NGROUPS for TA = 65
			  ◦ NIRSpec: optional TA, added WATA
			  ◦ MIRI: optional TA for LRS
			  ◦ NIRISS: only NISRAPID permitted in SOSS template
			  ◦ ALL: TSO special requirement added, NINTS <= 65535, warning (not error) for exposures > 10,000s
			• Ran out of time to discuss JDox

Slides

Action items

- [ ] Unknown User (birkmann): PR to enable MSATA for TSOs