



EMIR Status and Short Term Plan

Some very fresh results

F. Garzón @ EMIR Team

EMIR PI



EMIR: general description

★ EMIR is a NIR Imager and multi-object spectrograph, which will be a common user instrument for GTC

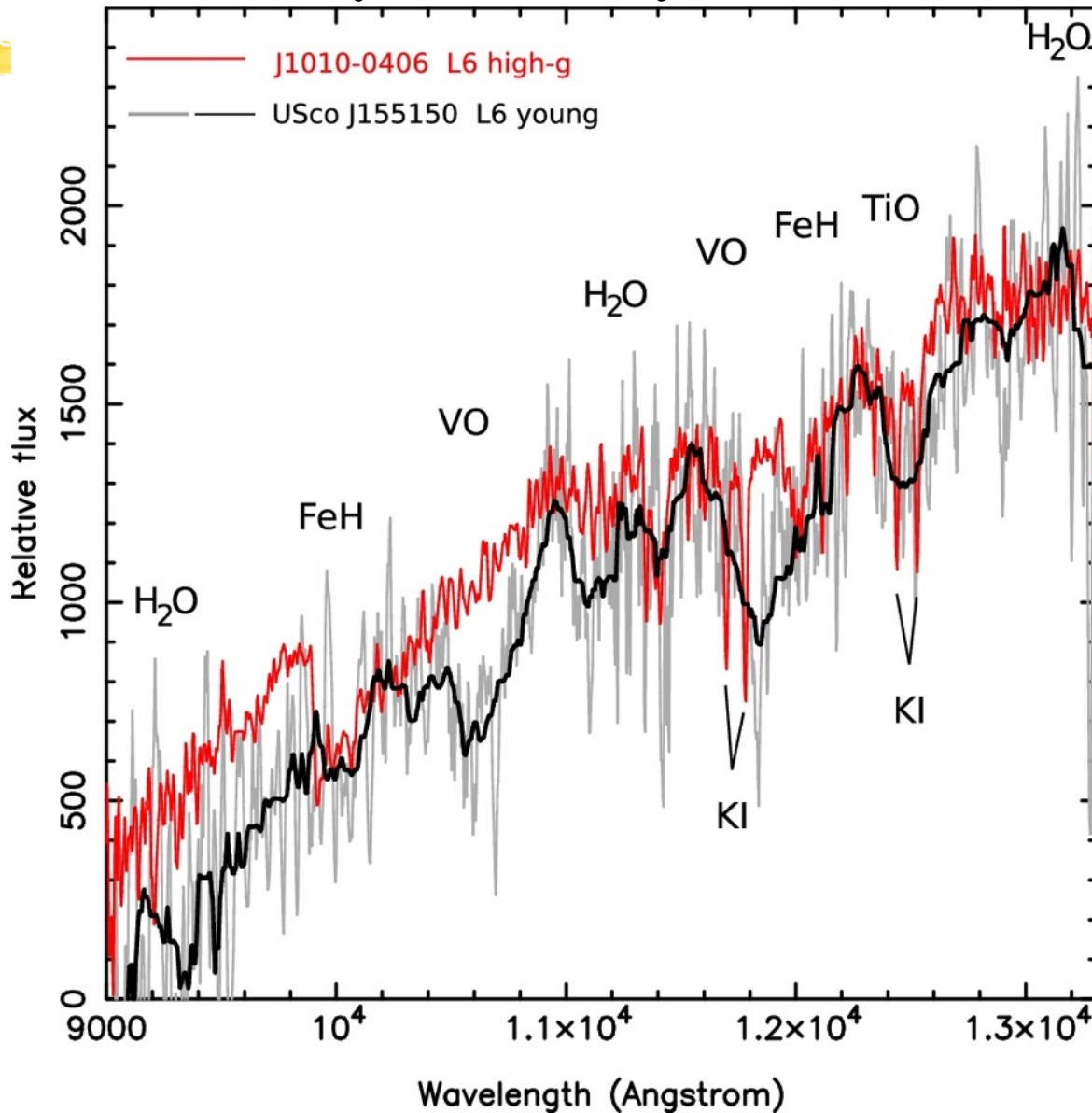
| | | | |
|-------------------|--|-------------|--|
| Spectral Range | 0.9-2.5 μm [1.1-2.5 μm] | MOS mode | |
| Top priority | MOS in K band | FOV | 6,7x4 arcmin (55 slitlets) |
| Spectral Resol. | 5000,4250,4000 (JHK) ~1000 HK + YJ | Sensitivity | K~20.1 in 2h @ S/N=5 (continuum) |
| Spectral coverage | 1 single window/exp. | | 1.4x10 ⁻¹⁸ erg/s/cm ² /Å @ S/N=5 (line) |
| Detector | HAWAII2 2048 ² | Image mode | |
| Plate Scale | 0.2 arcsec/px | FOV | 6.7x6.7 arcmin |
| Image quality | $\theta_{80} < 0.3$ arcsec | Sensitivity | K~22.8 in 1h @ S/N=5 in 0.6 arcsec aperture |



Commissioning resumé

- ★ Shipping & integration:
 - ★ May, 20th: EMIR arrives to the GTC
 - ★ May, 23th: integration begin
 - ★ June, 2nd: lifted to Nasmyth platform
- ★ Several comm. periods totaling ~20 nights during 2016
- ★ After this, img. + LS modes commissioned
 - ★ Some issues remained.
 - ★ Being fixed along the time

1^{er} espectro publicado



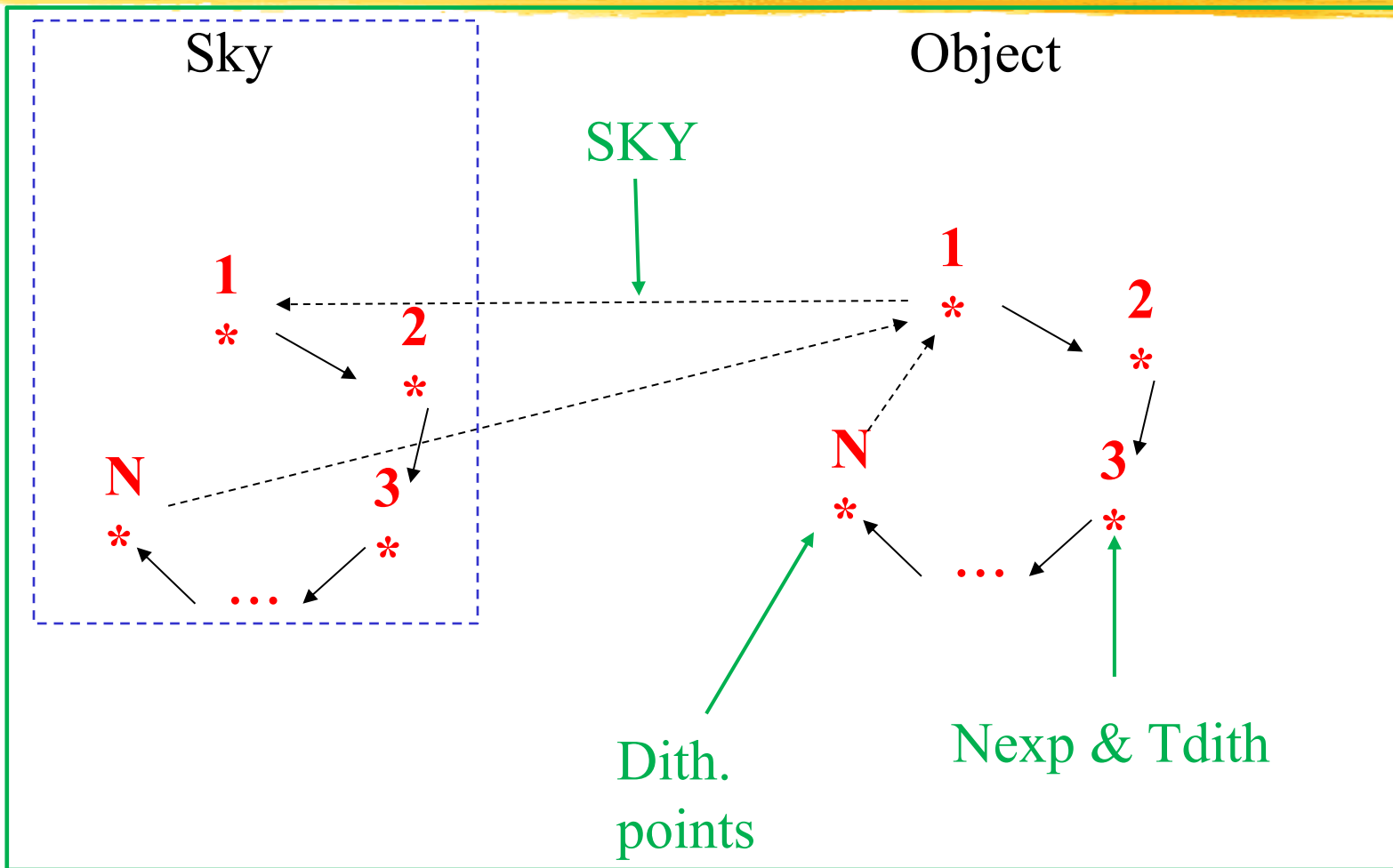
Lodieu et al, 2018



Obs Modes in place

- * There are DRP recipes for each mode
 - ✦ Progress on going
- * FLATBB /FLATfil
- * STARE_IMG
 - ✦ SKY- y/n
 - ✦ Dither pattern: 1,4,7
- * LS/MOS
 - ✦ ABBA
 - ✦ SKY
- * New Modes planned
 - ✦ Img. Acq. (AB and/or ABBA pattern)
 - ✦ LS/MOS with stare pointing
 - ✦ ...
- * Obs. Sequence built using Ton-source + mode spec (use of efficiency calculator tool)
 - ✦ Now, obs. param. can be also entered by the user

Obs. Sequence structure



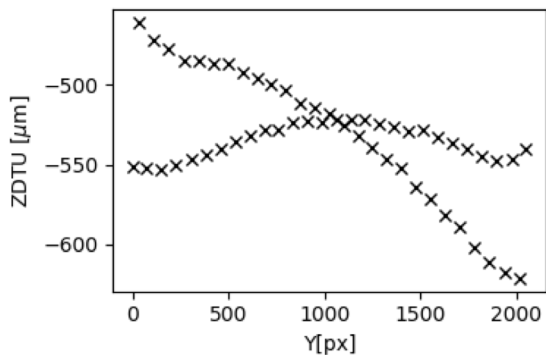
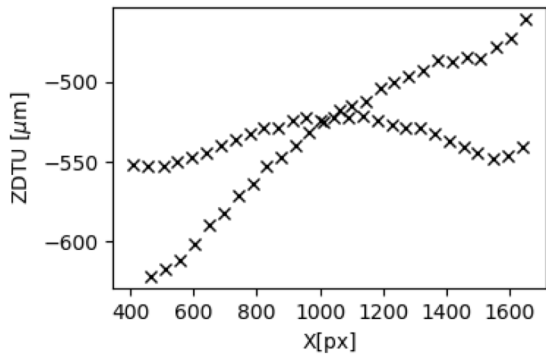
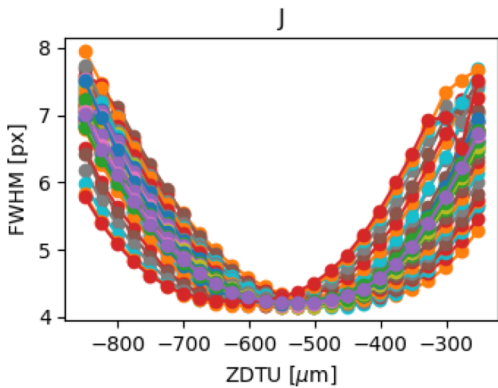
Niter



Maintenance downtime

- ★ Begin on November 1st at Nasmyth
- ★ Emir dismounted on Nov. 8th
- ★ In clean room at GTC since then
- ★ Two main maintenance tasks:
 - ★ Correction of detector tilt
 - ★ Replacement of part of the CSU piezos
 - ★ Internal cleaning and other minor things
- ★ Cooldown to check functionality before sitting back at Nasmyth
- ★ EMIR back in operation by mid January 18 (TBC)

Detector (almost) tilt corrected

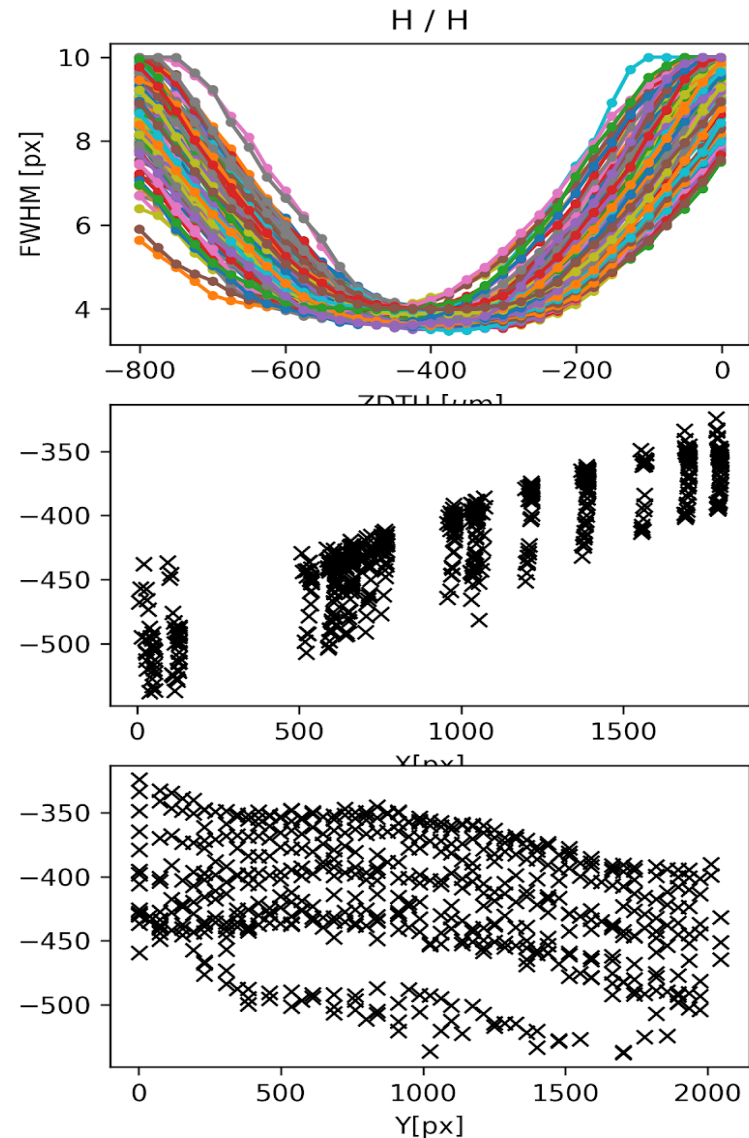


Mejor Z (micras): -534.694 ± 1.360

Giro en X (horizontal, mrad): 2.066 ± 0.126

Giro en Y (vertical, mrad): 3.875 ± 0.211

Detector (almost) tilt corrected



787 líneas para ajuste de plano
 Mejor Z (micras): -490.514 ± 0.398
 Giro en X (horizontal, mrad): 1.708 ± 0.040
 Giro en Y (vertical, mrad): 5.211 ± 0.046



DRP on / off line

★ New features:

- ★ on line spectral calibration
- ★ Spectral flat

★ Plans to read detector faster:

- ★ New possibilities to treat data off-line

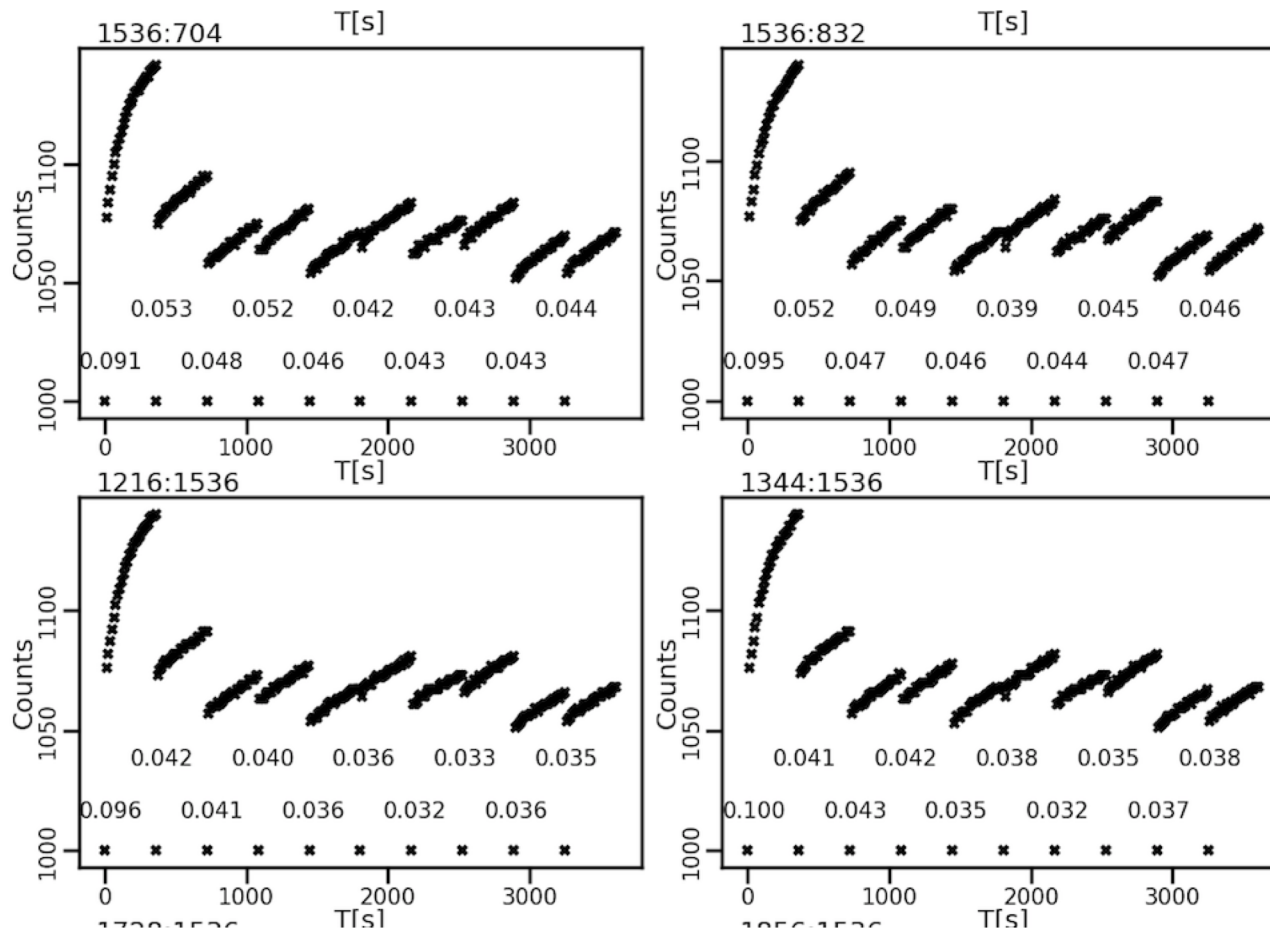
Detector features

- ★ Due to drifts in detector reads with time
- ★ Calibrated only for a set of detector's conf.:
 - ★ CDS: 1.5s, 2s:15s:1s
 - ★ RAMP:
 - ★ [20s,30s]@5reads
 - ★ [60s,120s]@10reads
 - ★ [160s:360s:40s]@(10+3*i)reads
- ★ User can define a subset with T_{min}/T_{max}

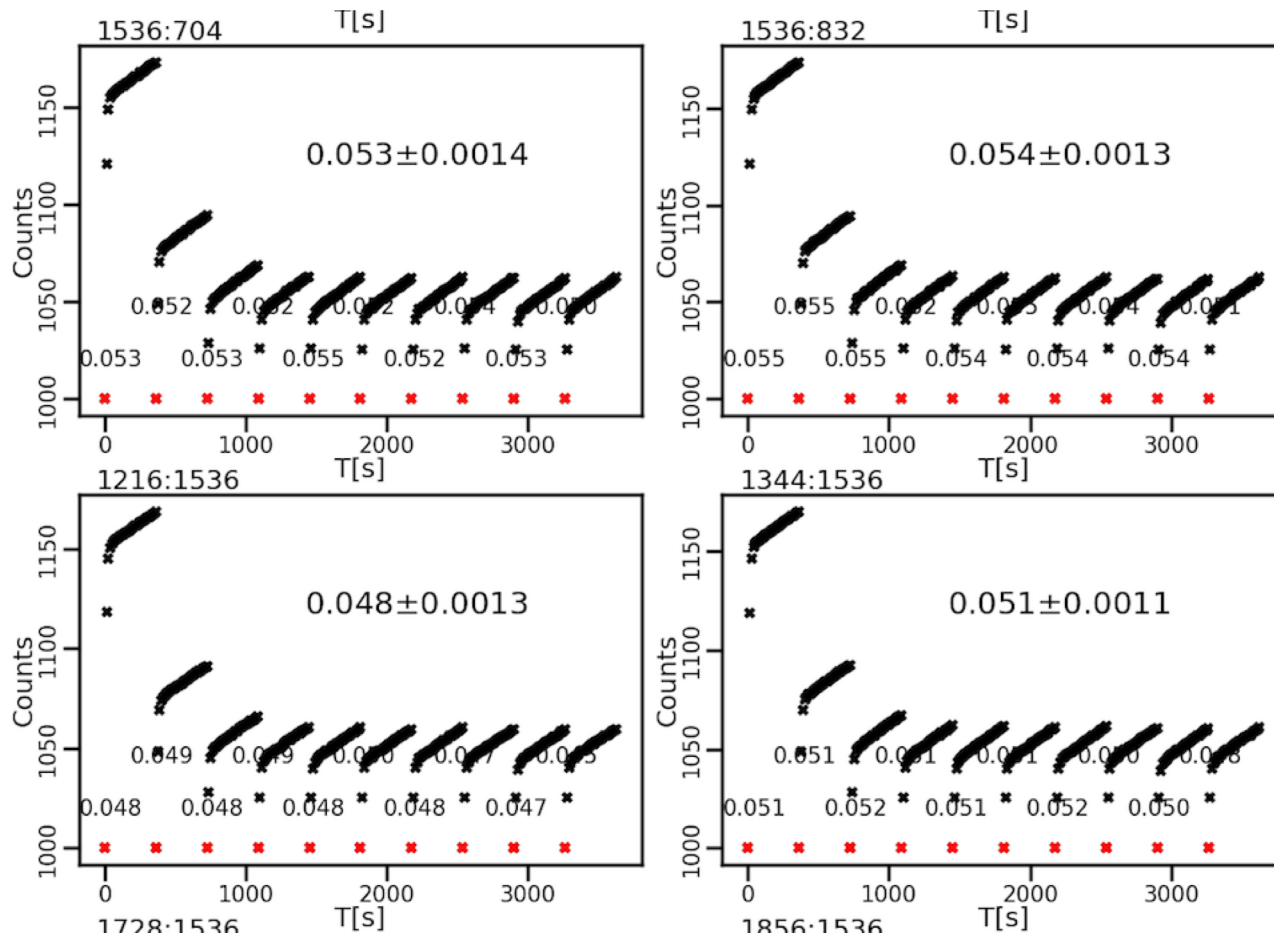
News on Detector

- ★ Operation at 70K (from 77K nominal)
 - ★ Cooler temperatures will be tested soon
- ★ User can specify (Niter, Nexp, Tdith)
(TBD)

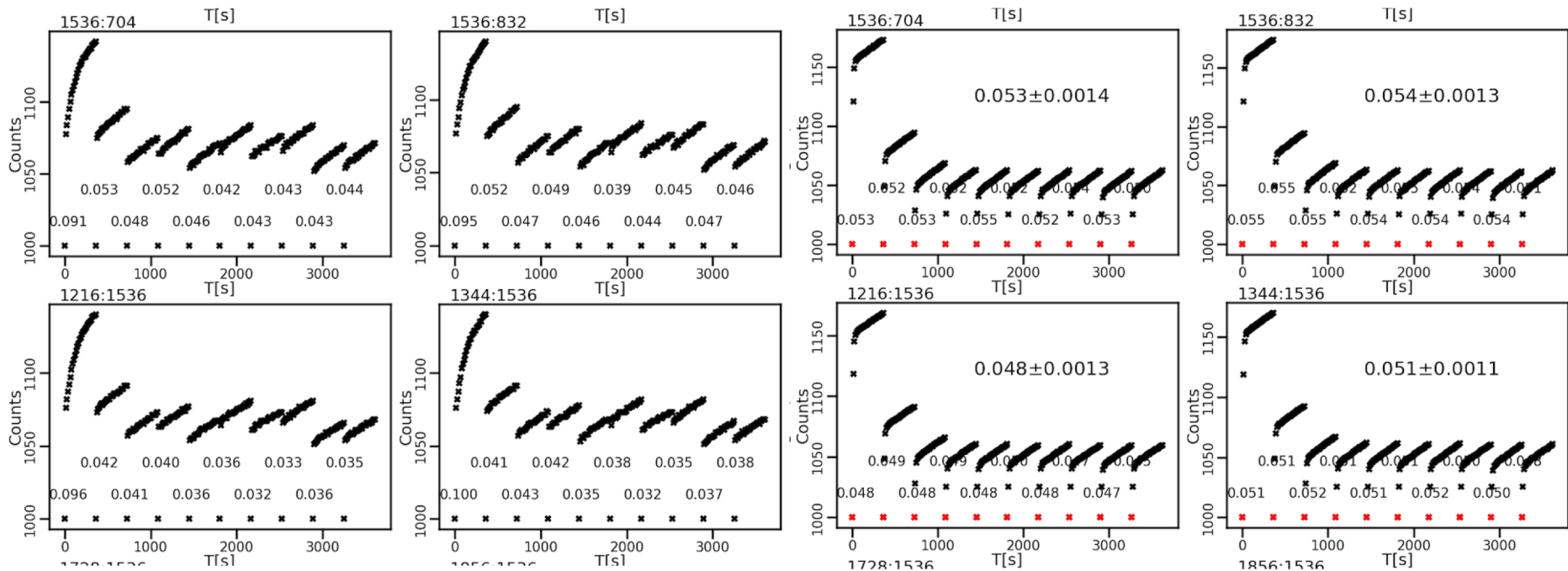
News on Detector



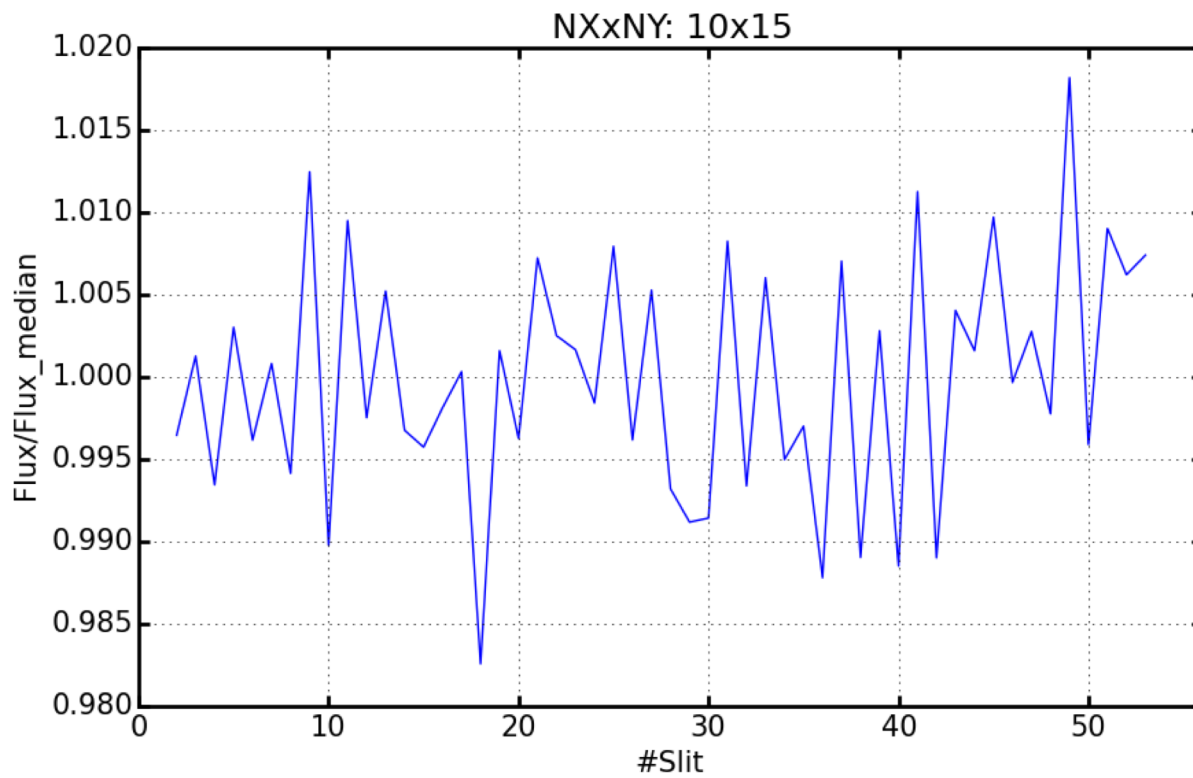
News on Detector

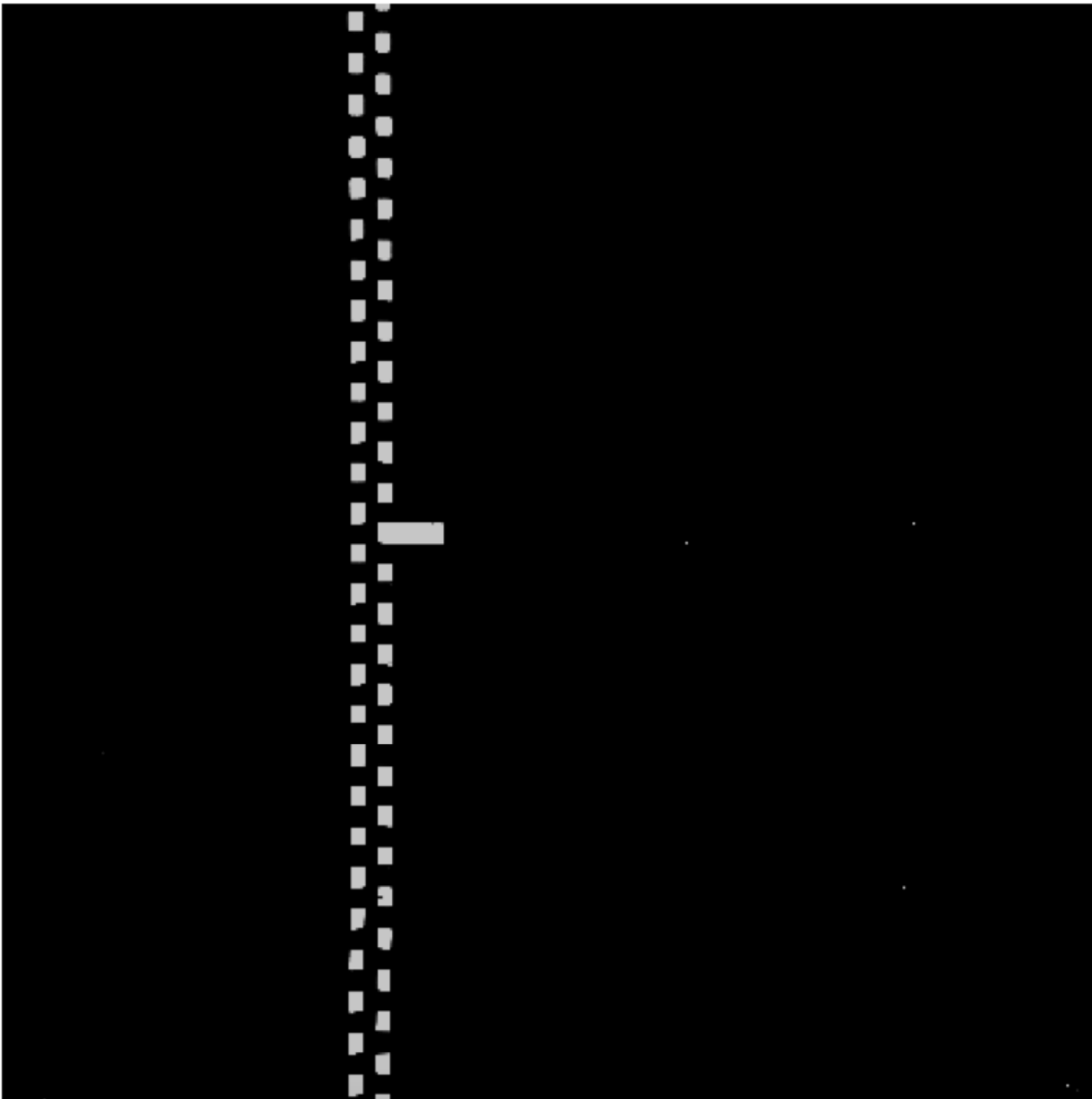


News on Detector

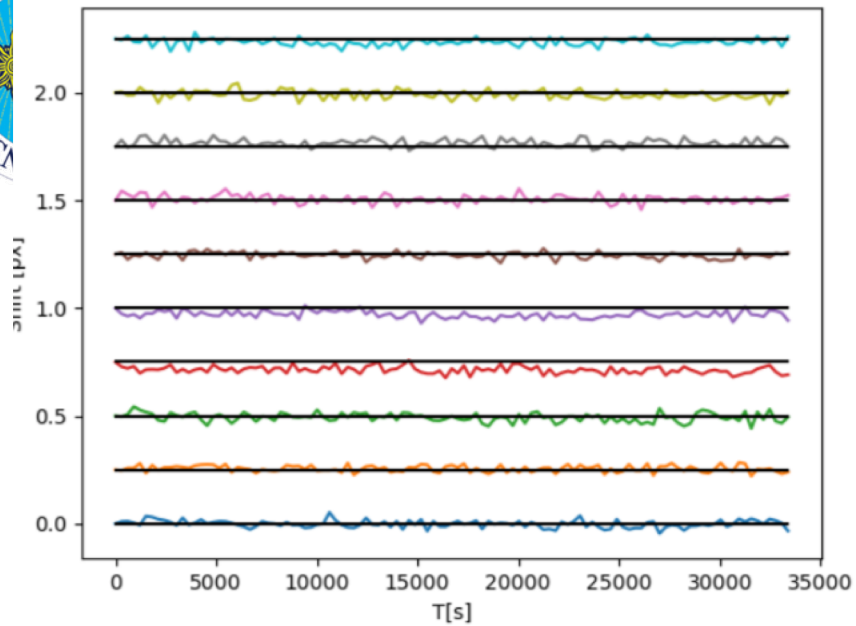


CSU slit calibration

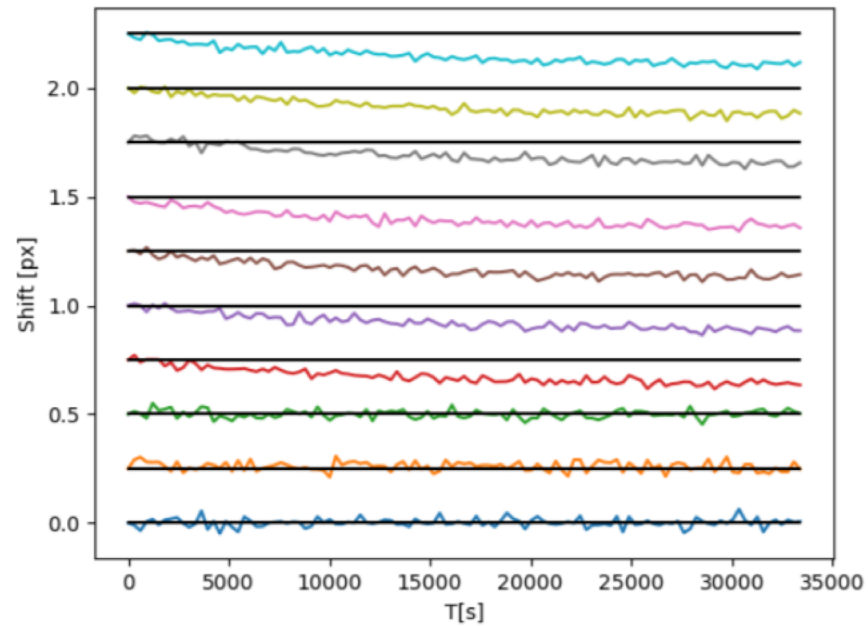




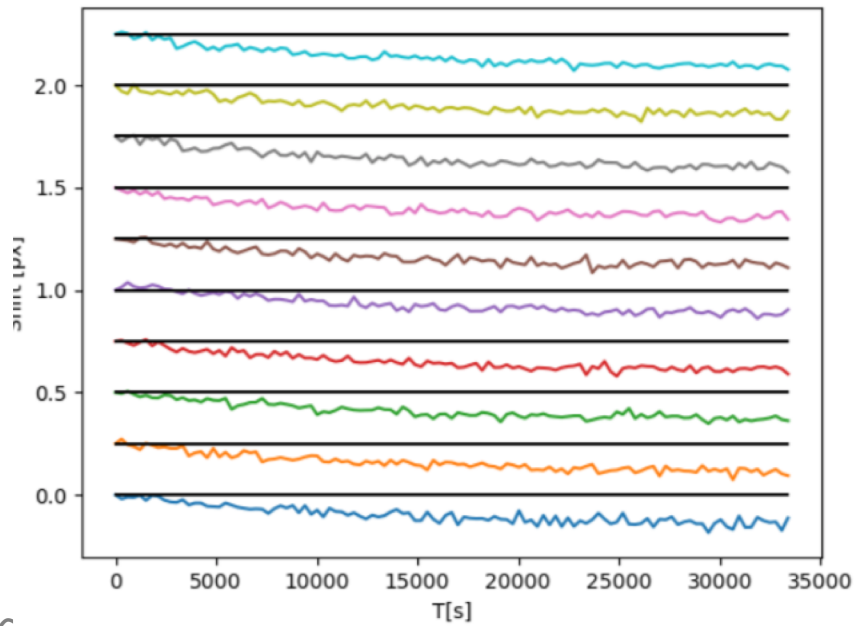
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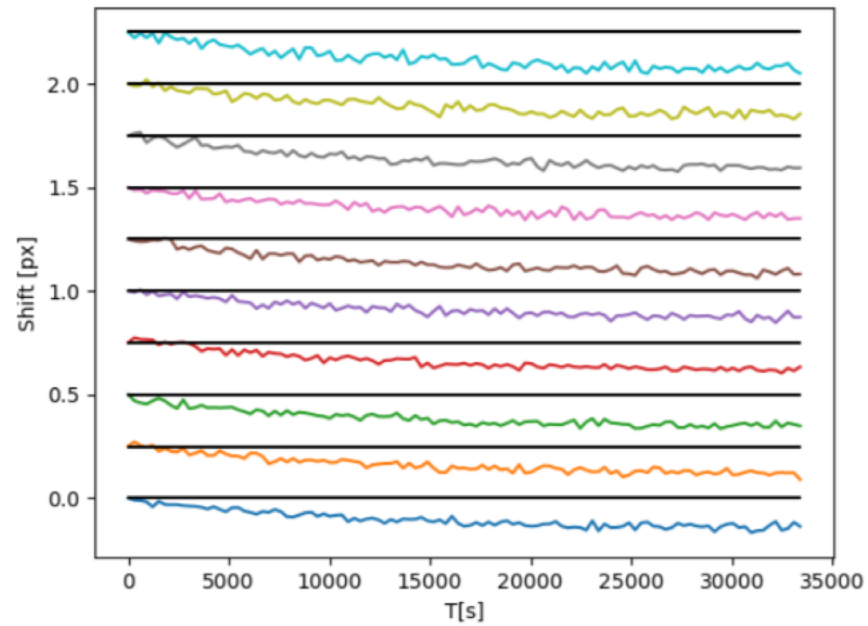
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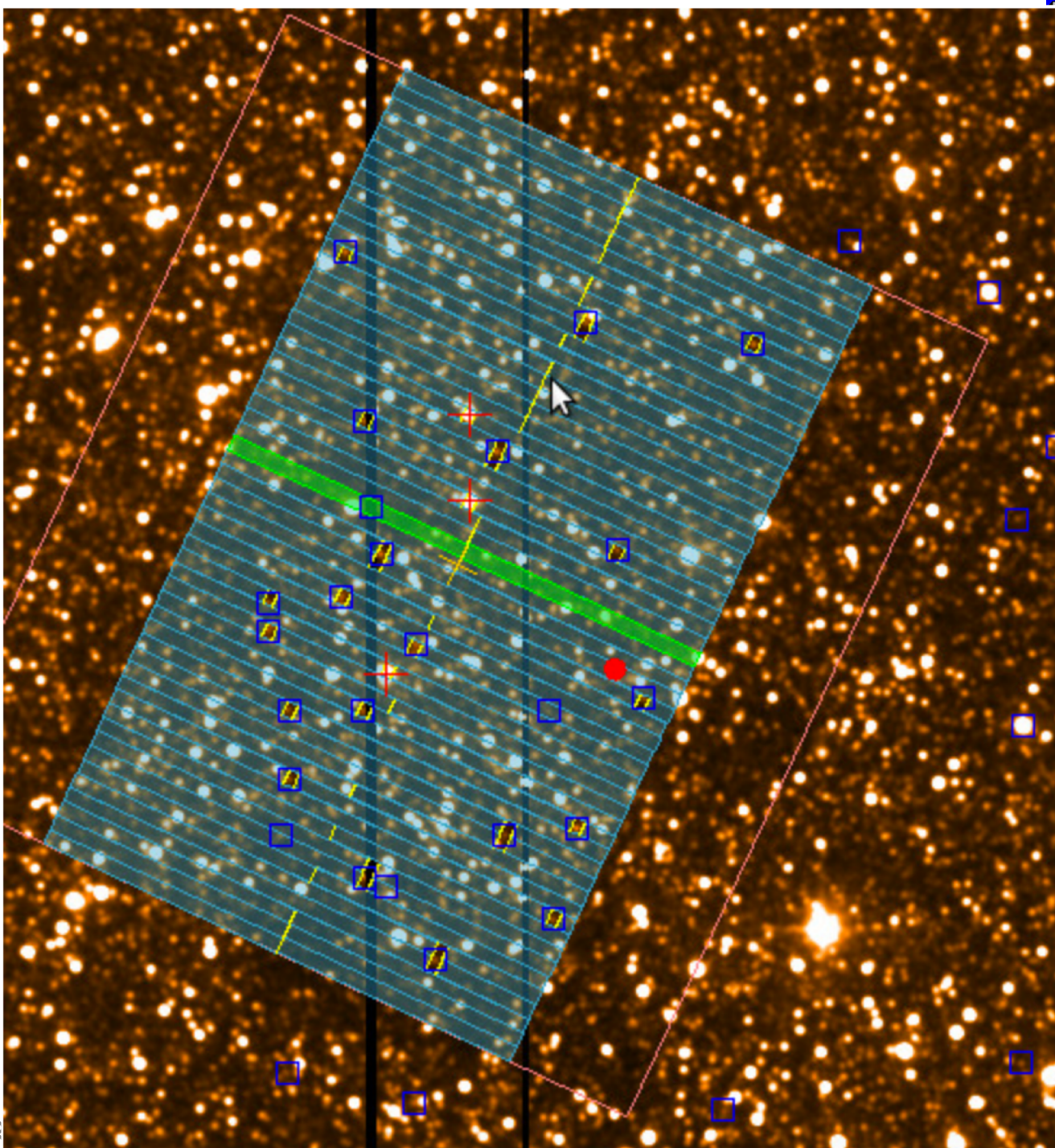


Bars: 64:73



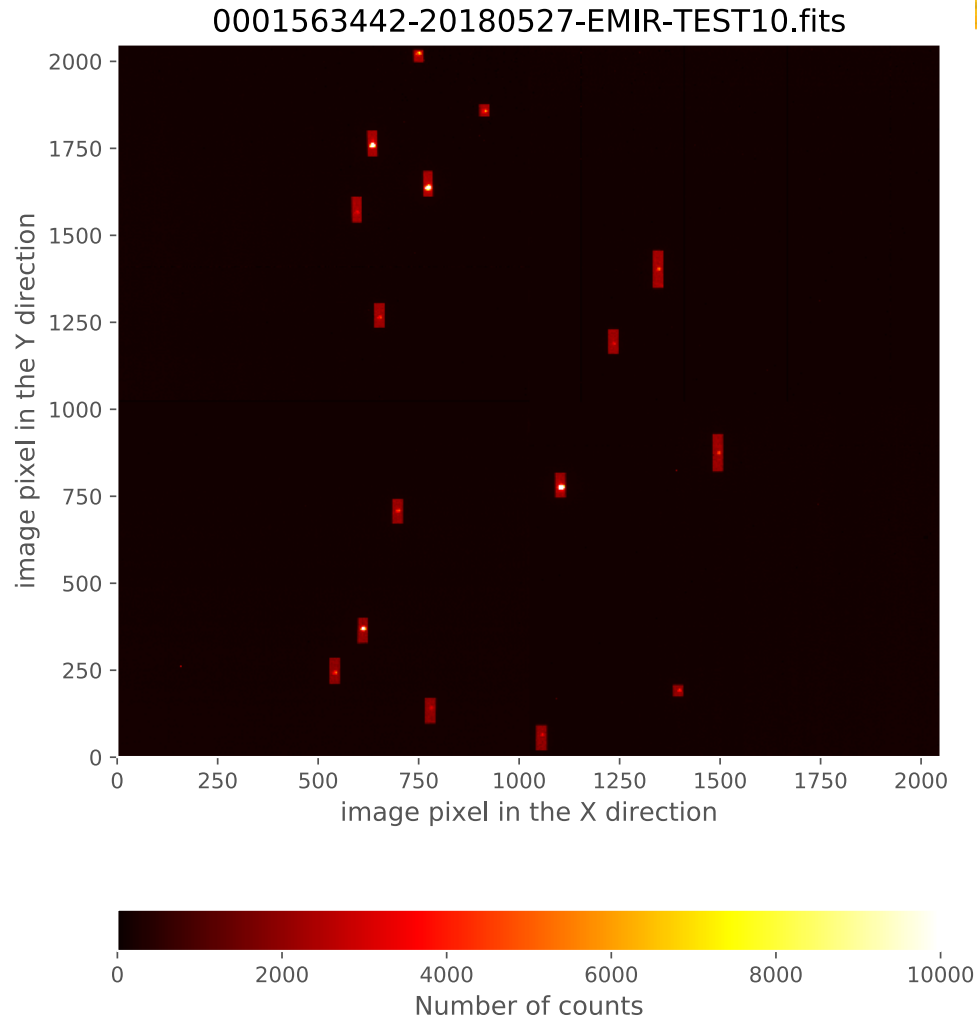
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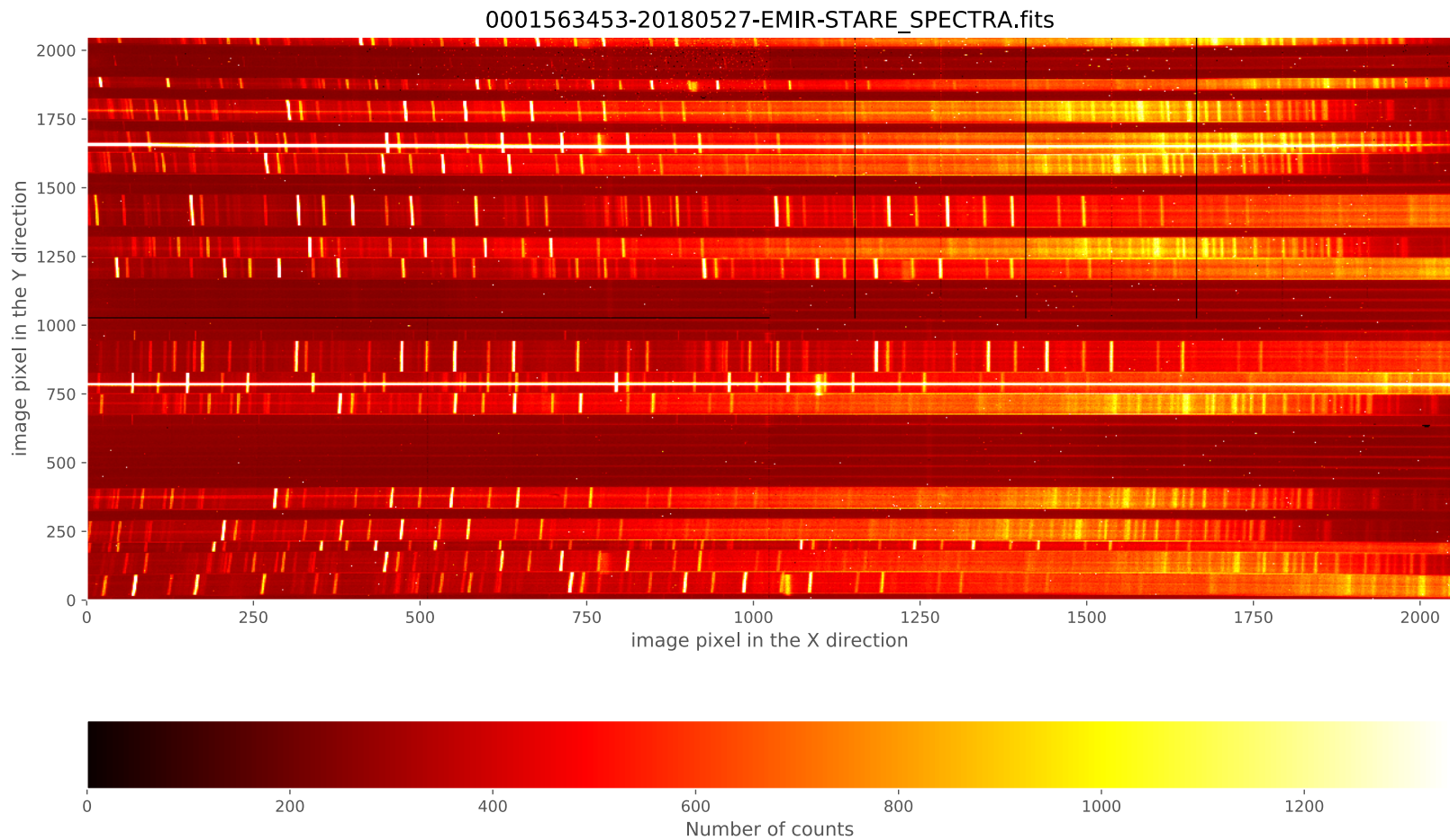




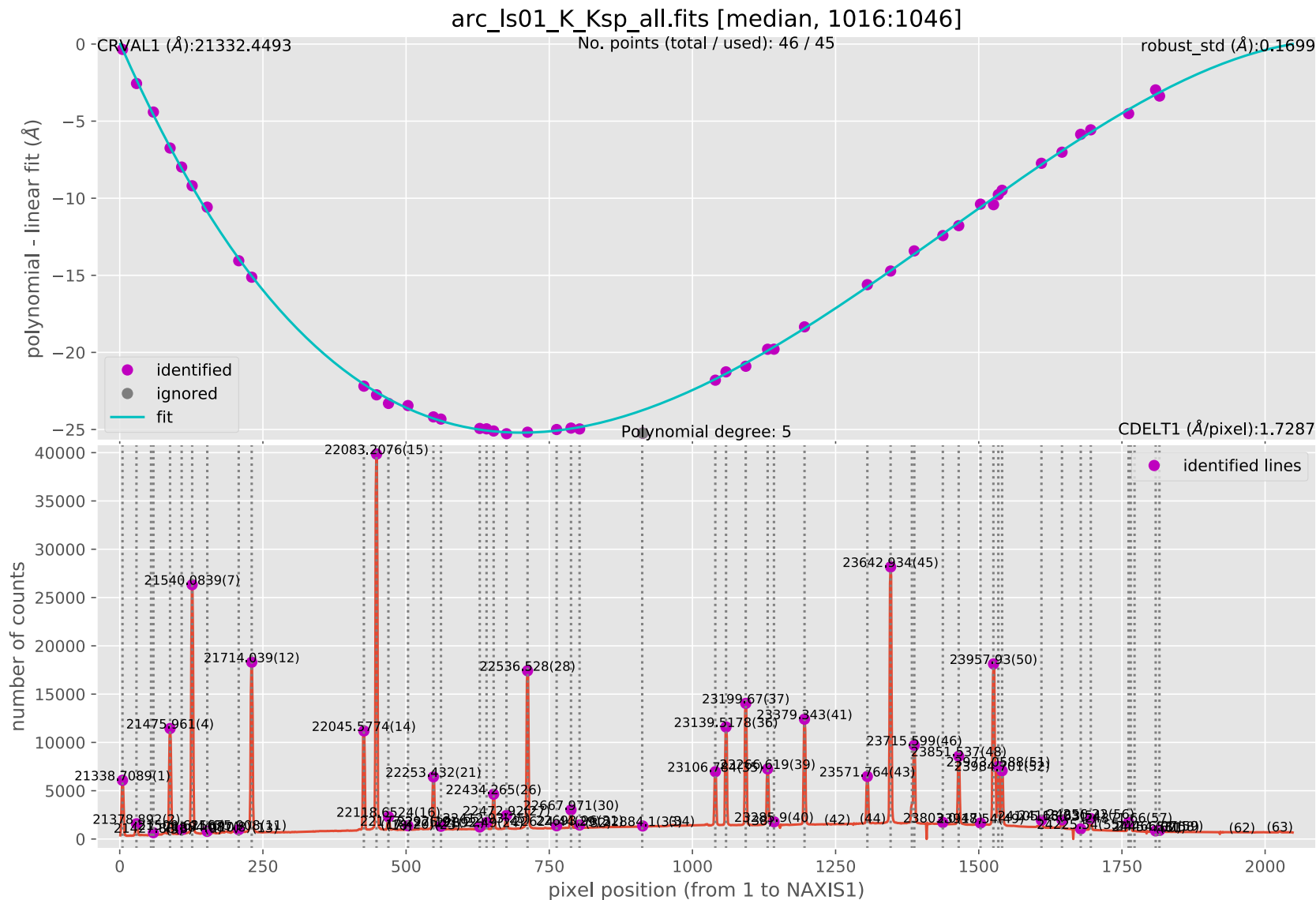
Very fresh results



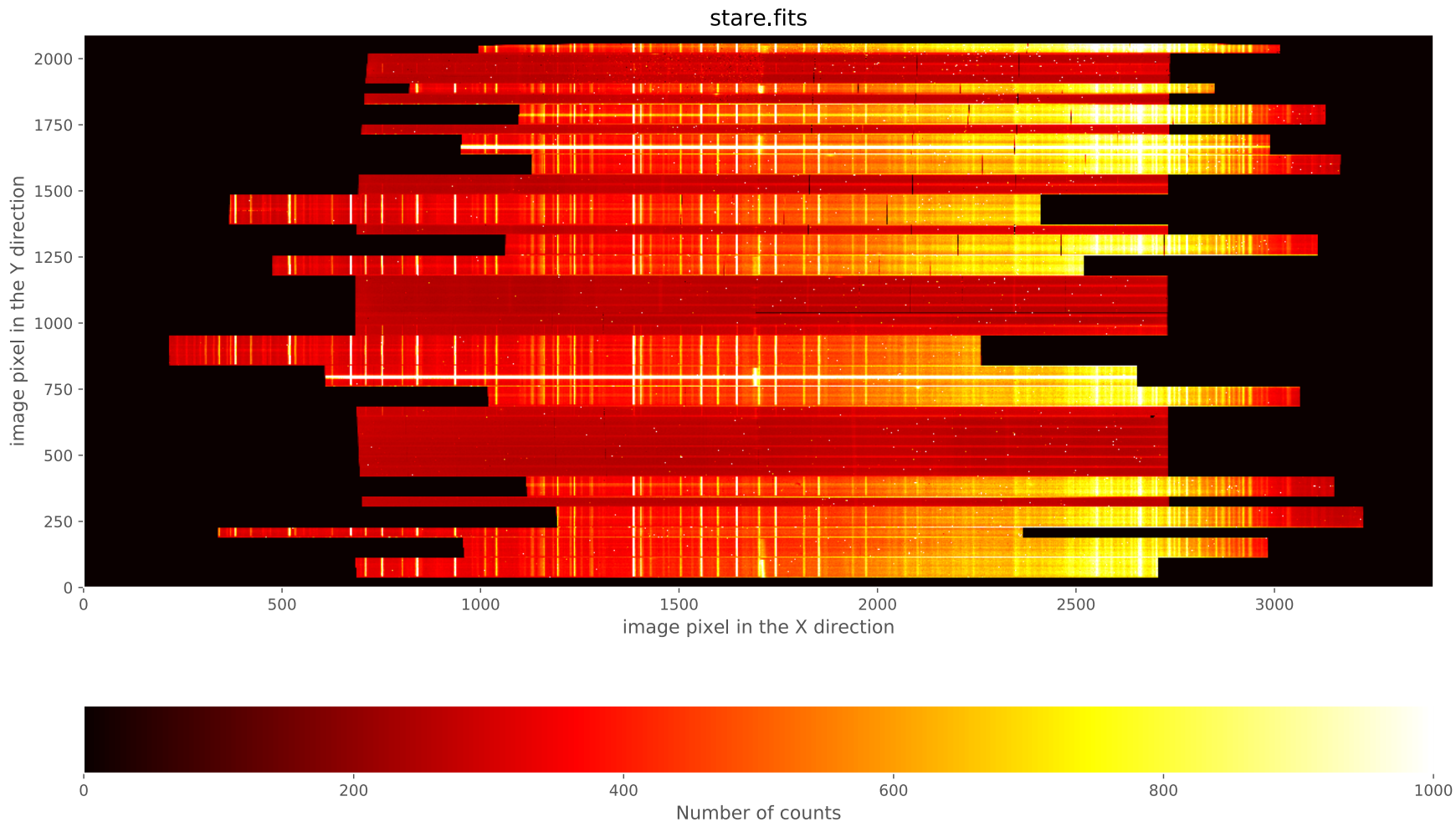
Very fresh results



Very fresh results



Very fresh results



Very fresh results

