Focal plane commissioning

Thibault Guillemin (LAPP)
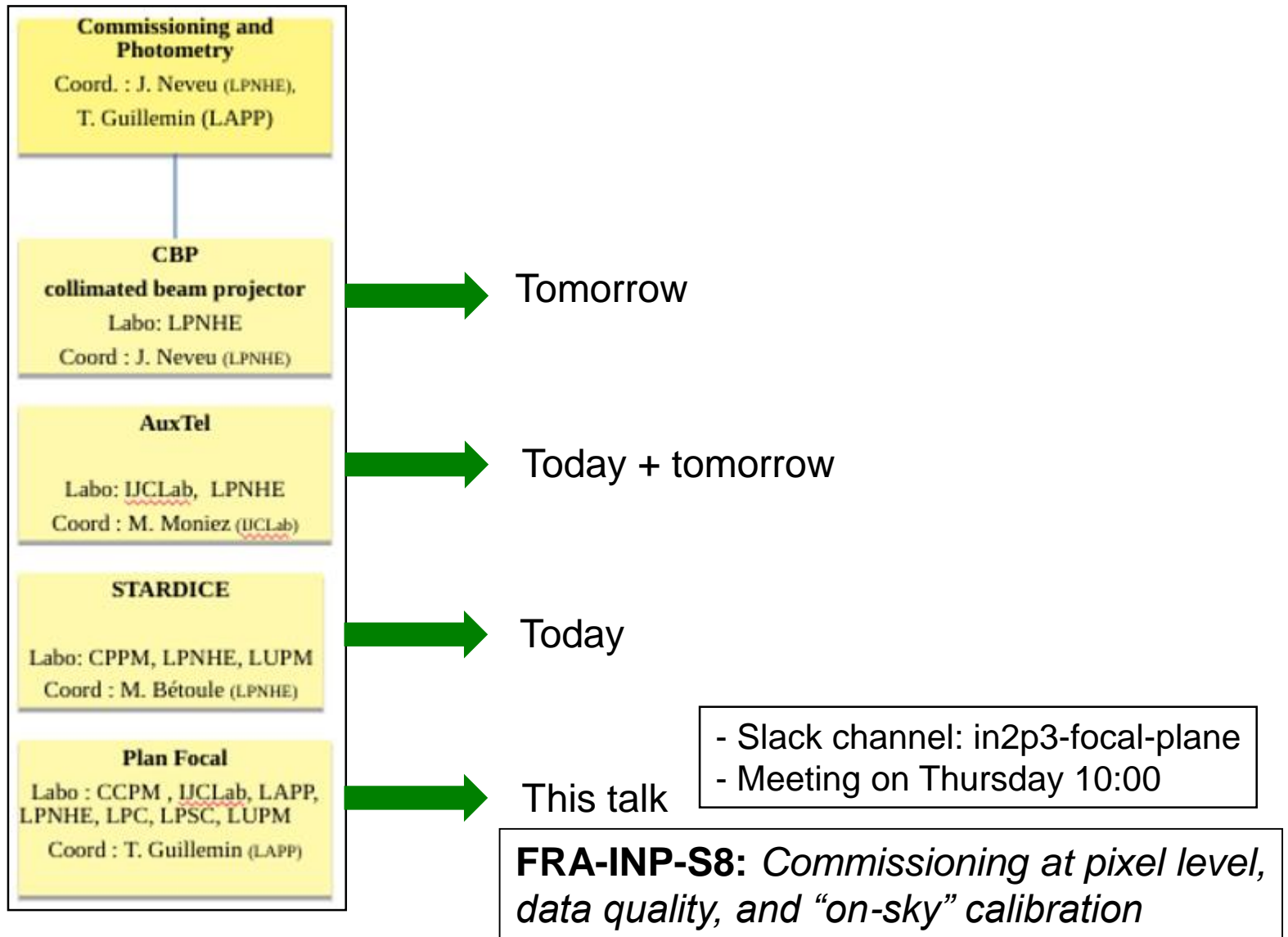
LSST-France meeting
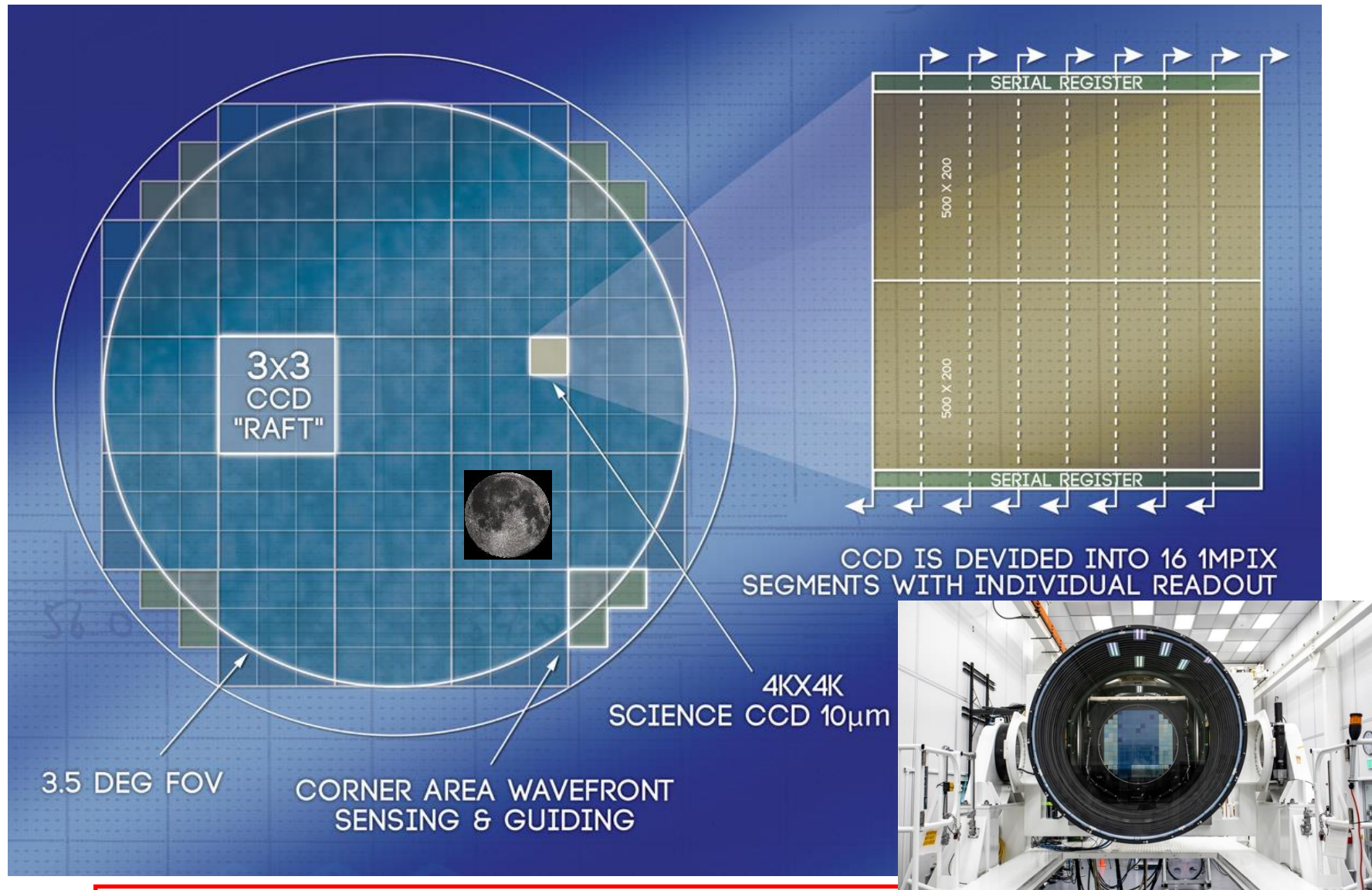
Lyon

December 15, 2023

Commissioning in LSST-France
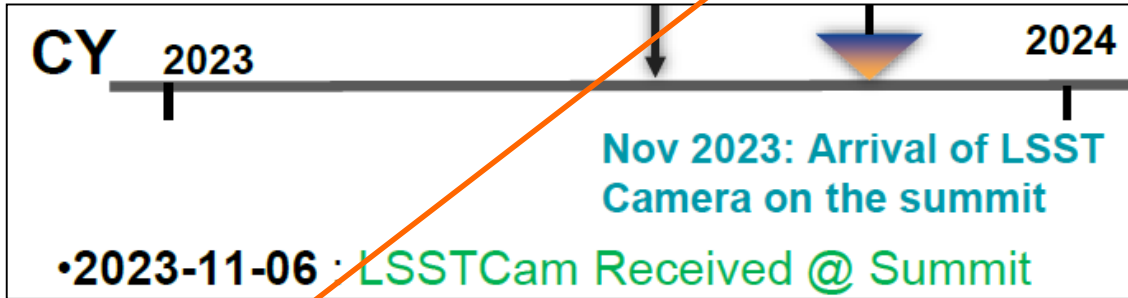
Commissioning and Photometry

Coord. : J. Neveu (LPNHE),

T. Guillemin (LAPP)

CBP
collimated beam projector
Labo: LPNHE
Coord : J. Neveu (LPNHE)

→ Tomorrow

AuxTel

Labo: IJCLab, LPNHE
Coord : M. Moniez (IJCLab)

→ Today + tomorrow

STARDICE

Labo: CPPM, LPNHE, LUPM
Coord : M. Bétoule (LPNHE)

→ Today

Plan Focal
Labo : CCPM , IJCLab, LAPP, LPNHE, LPC, LPSC, LUPM
Coord : T. Guillemin (LAPP)

→ This talk

- Slack channel: in2p3-focal-plane
- Meeting on Thursday 10:00

FRA-INP-S8: *Commissioning at pixel level, data quality, and "on-sky" calibration*

Focal plane layout

21 science rafts / 1 raft = 9 CCD / 1 CCD (e2v/ITL) = 16 amplifiers
3024 readout channels to calibrate

Some delay
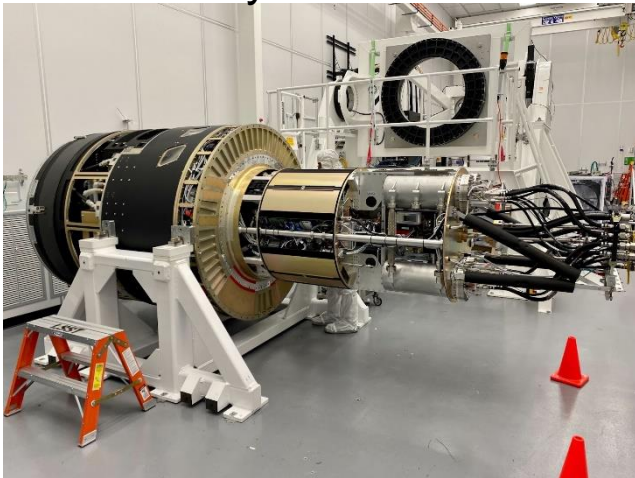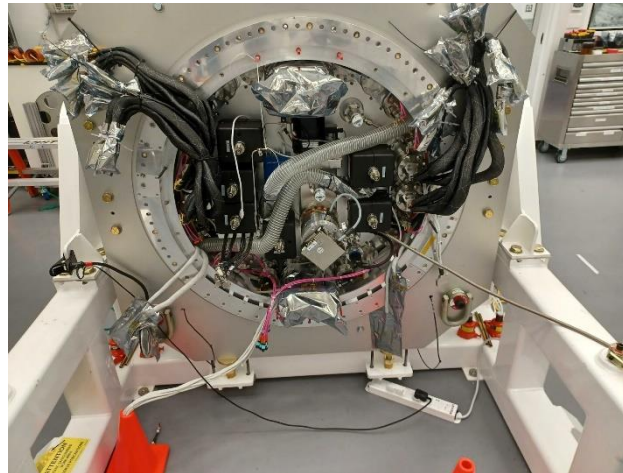
Rubin PCW, August 2023

Fake news!

Nov 2023: Arrival of LSST Camera on the summit
•2023-11-06 : LSSTCam Received @ Summit

Cryostat vacuum leak: August 18

REB power supply feed-through
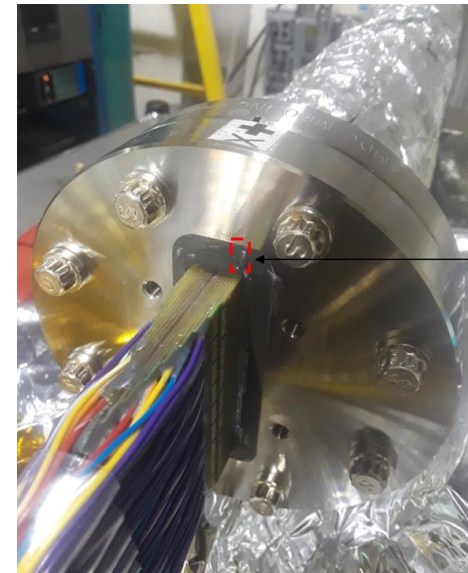
Utility trunk

Feed-through plate

October 12:

Camera schedule

- 11/14/2023 - 11/27/2023: EO testing; warm up and vent cryostat; camera off
- 11/28/2023 - 12/5/2023: IR-2 power outage
- 12/6/2023 - 12/20/2023: Recover from power outage; cool down camera
- 12/21/2023 - 1/5/2024: Continue EO testing (with reduced effort over break)
- 1/8/2024 - 1/17/2024: Swap in remaining 3 glass filters
- 1/18/2024 - 2/2/2024: Complete EO testing
- **2/5/2024: Pre-Ship Review #1**
- 2/5/2024 - 2/27/2024: Test auto changer and loader #2; prep camera for crating
- **2/22/2024: Pre-Ship Review #2**
- 2/28/2024 - 3/11/2024: Mount Camera in shipping container
- 2/5/2024 - 3/14/2024: Prep and pack ancillary camera equipment
- 3/14/2024 - 3/26/2024: Ship Camera and equipment
- **3/29/2024: Camera on the summit**

From SIT-COM meeting 06/12/23

Rubin schedule

    a.   Reinstall ComCam (End of May)

6. And as mentioned before, in June 2024, we are **scheduled** to install the M1M3 mirror on the telescope

    a.   Which means in July and August 2024 we are **scheduled** to be **on sky with ComCam**

7. LSSTCam is **scheduled** to arrive on Cerro Pachon in early April 2024

    a.   A month of unpacking,

    b.   ~1.5 months of getting it up and running in the white room (on Level 3)

    c.   ~2 months of running LSSTCam in the white room

    d.   Mid August - LSSTCam should be ready to install on the telescope

8. On sky with LSSTCam late 2024

On-sky ComCam data in July/August
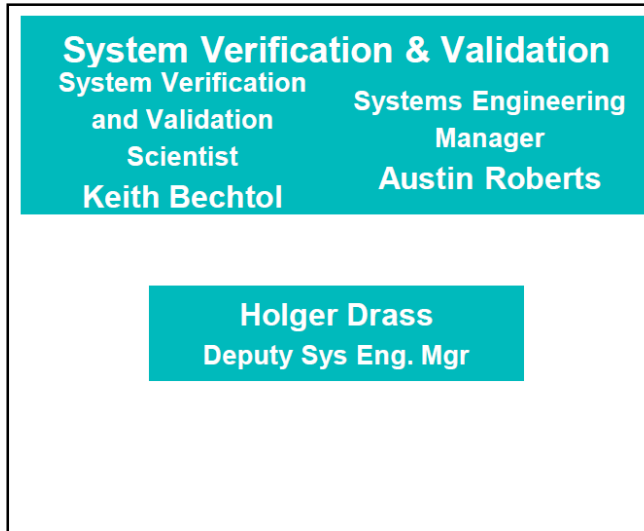
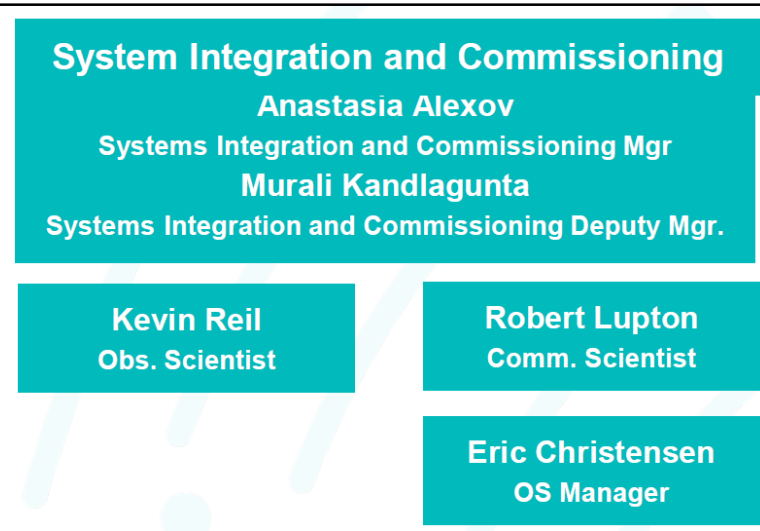**Calibration LSSTCam data in June/July**

From SIT-COM meeting 06/12/23

First on-sky LSSTCam data in December

Organizational aspects

DESC SAWG in pause once camera shipped to Chile

SVV   ## SIT-COM

System Verification & Validation

System Verification and Validation Scientist
Keith Bechtol

Systems Engineering Manager
Austin Roberts

Holger Drass
Deputy Sys Eng. Mgr

System Integration and Commissioning

Anastasia Alexov
Systems Integration and Commissioning Mgr
Murali Kandlagunta
Systems Integration and Commissioning Deputy Mgr.

Kevin Reil
Obs. Scientist

Robert Lupton
Comm. Scientist

Eric Christensen
OS Manager

SVV: Operations Rehearsal for Commissioning 2-5 April 2024

Organizing committee:

- @Keith Bechtol   (chair)
- @Eric Christensen
- @Anastasia Alexov
- @Tony Johnson
- @Scot Kleinman
- @Robert Lupton
- @Colin Slater
- @Chris Walter

Process ComCam calibration products at USDF (including cp_verify)	ComCam
Process ComCam calibration products at summit (including cp_verify)	ComCam
Certify ComCam calibration products at USDF	ComCam
Transfer certified products back to Cerro Pachón and deploy	ComCam
Collect AuxTel daytime calibrations	AuxTel
Process AuxTel calibration products at USDF (including cp_verify)	AuxTel
Process AuxTel calibration products at summit (including cp_verify)	AuxTel
Certify AuxTel calibration products	AuxTel

Commissioning phases
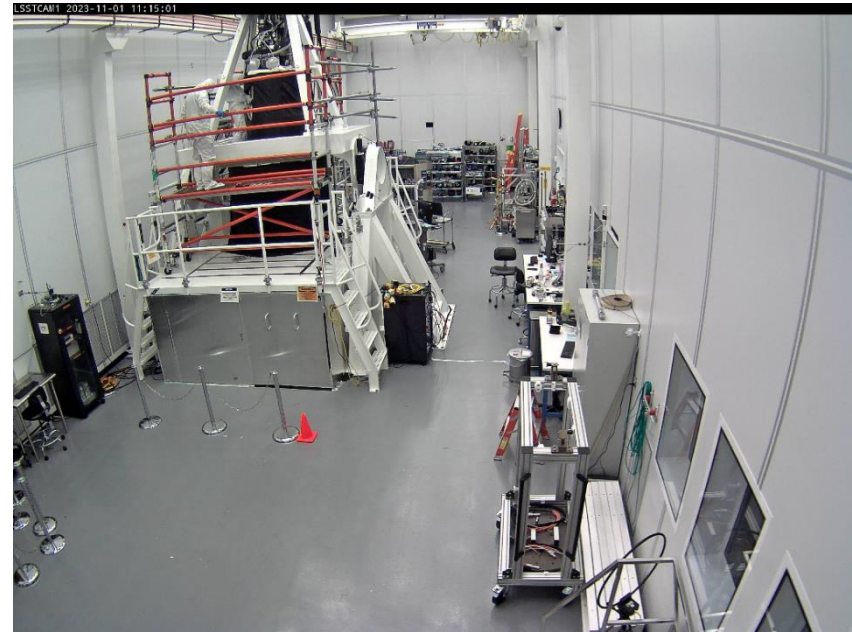

From E. Bellm

Run 6 at SLAC

Run 6a: June-July
Run 6b: November
Run 6c: December - end of January

Electro-Optical testing:
standard calibrations, filter transmission
curves, PTC vs λ, long stability runs, etc.

Replication of data USDF ➔ FrDF: **134 TB**
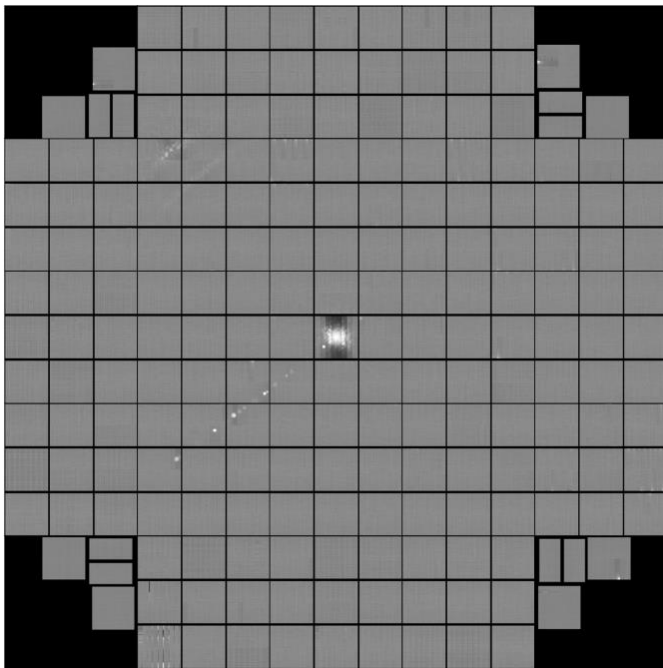Butler ingestion
Lot of data = lot of issues

Topics :
- CCD configuration optimization
- Investigations of puzzling effects
- CCOB analysis
- Brighter-Fatter effect (CTI and non-linearity corrections)
- Bias correction strategy

CCOB analysis

Johan
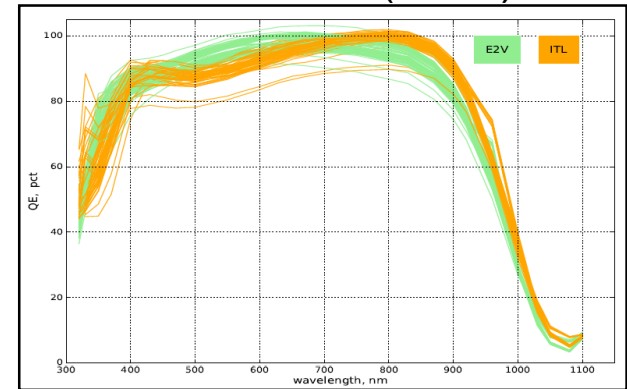
Work on:
- CCOB configuration
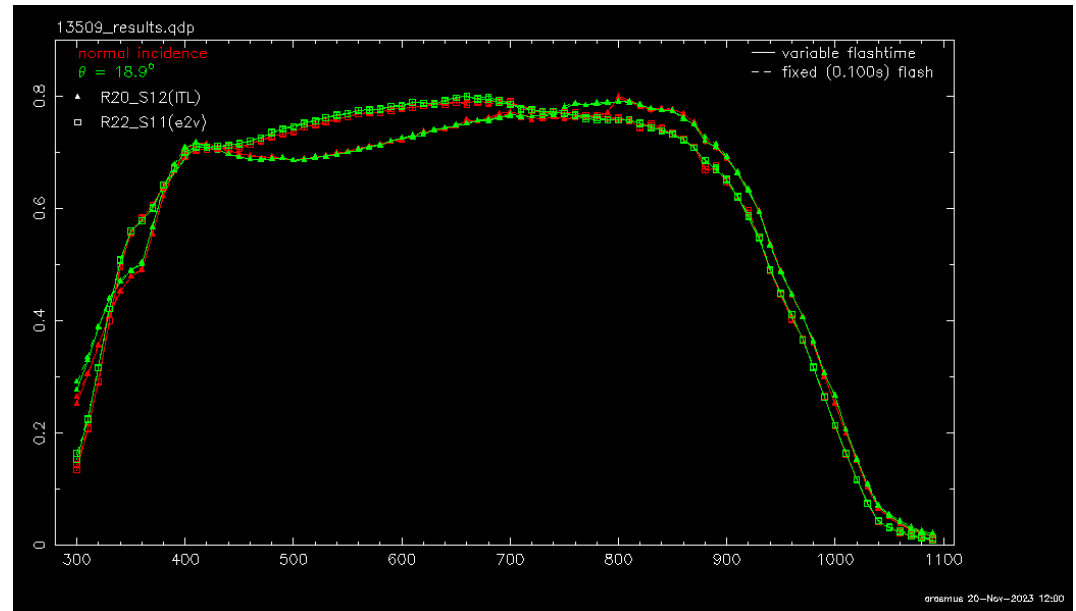- Ghost analysis

CCOB thin beam data

Pointing model working fine
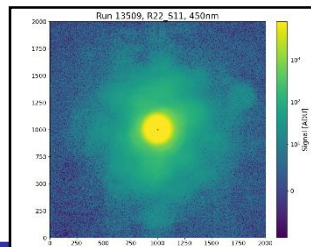
From S. Liang

RTM tests (2019)

QE curves

From A. Rasmussen
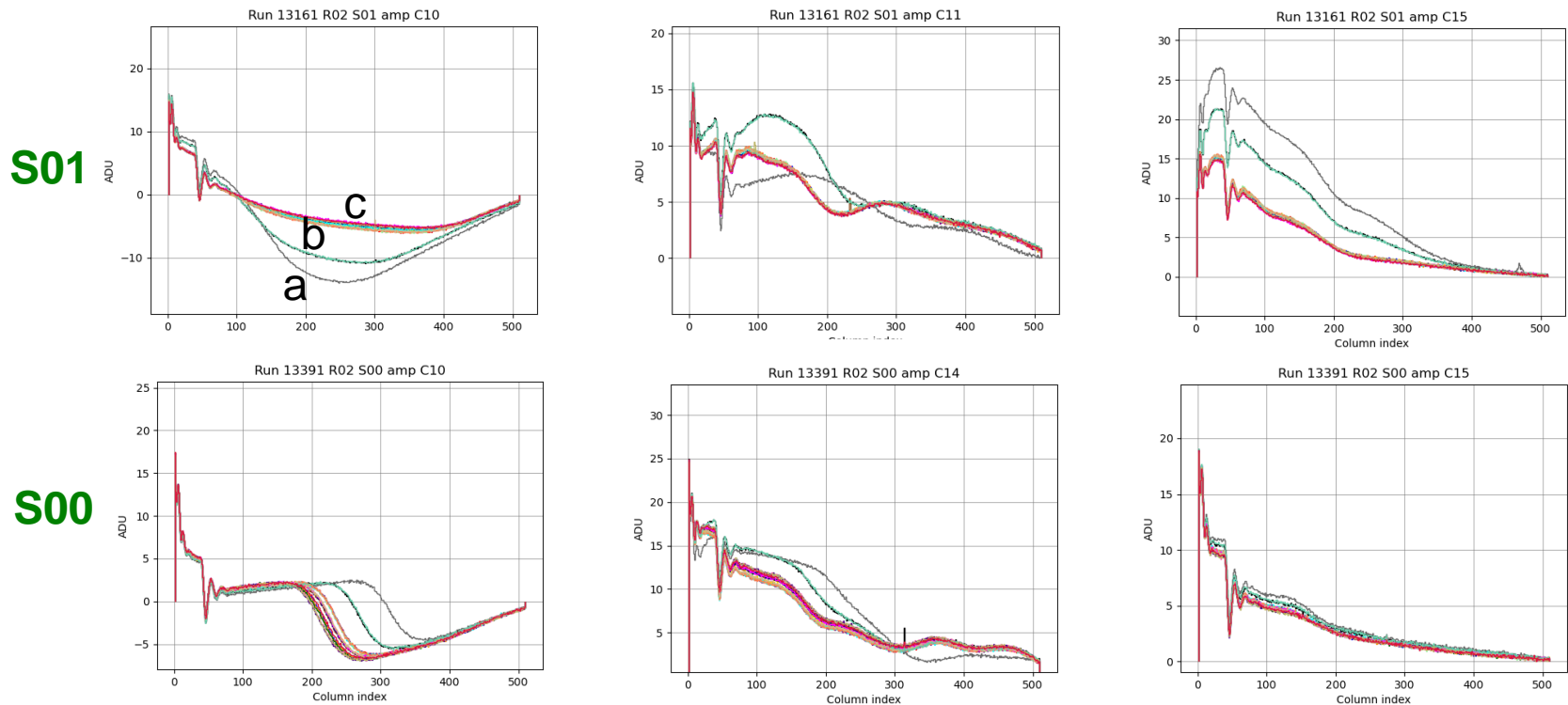
We are defining the baseline strategy for the bias correction in ISR (DM).
1) Hardware: get the most stable biases
2) Software: best method to correct for the per-amp residual instabilities and 2D shapes

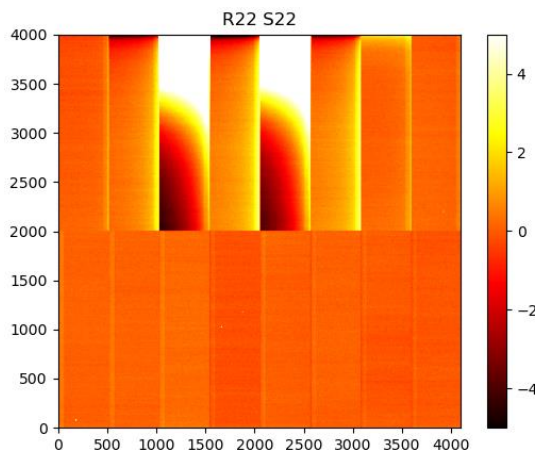## ITL multimodal biases

Correlations observed at the REB level

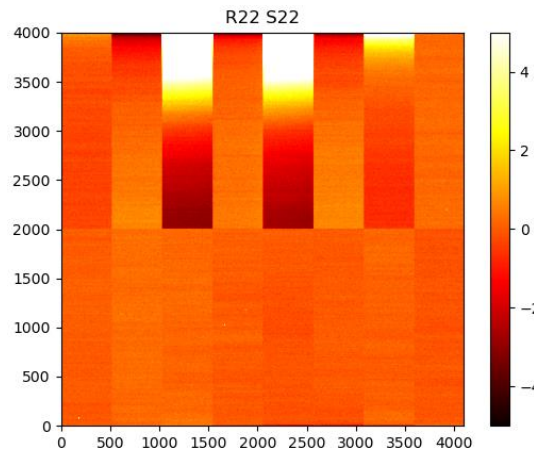We are defining the baseline strategy for the bias correction in ISR (DM).
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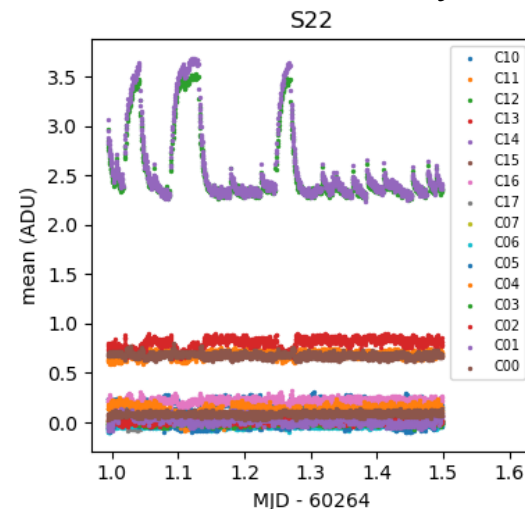
e2v yellow corners
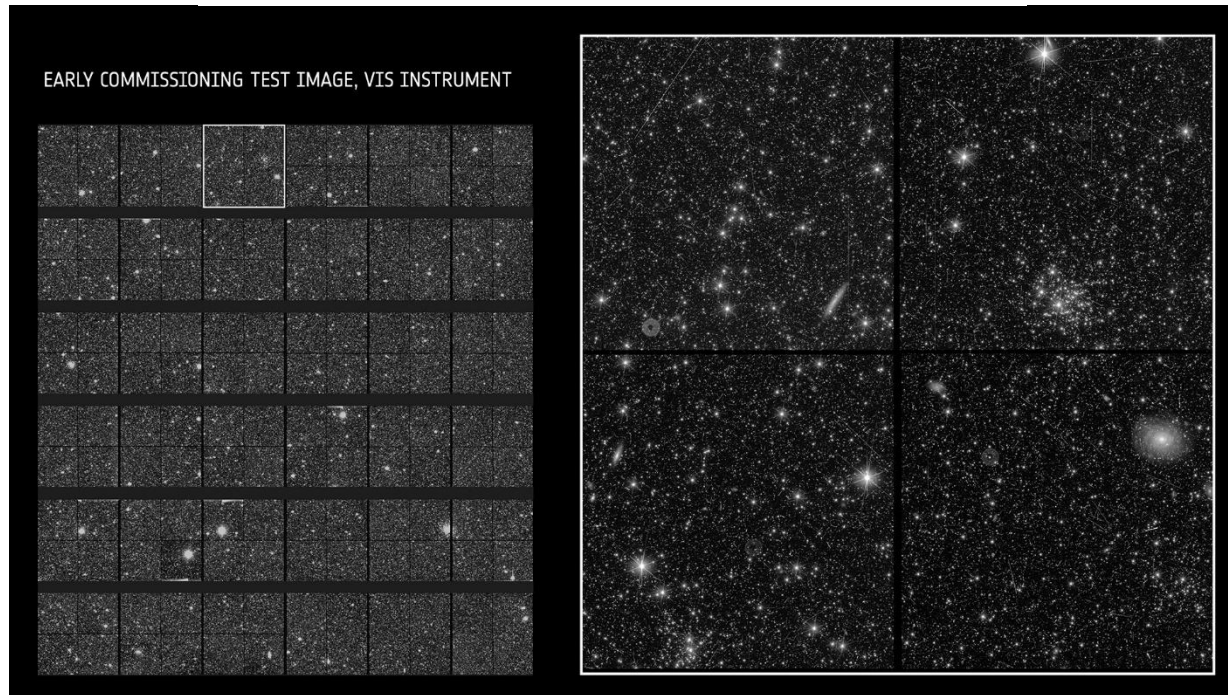
Master bias

Master dark15 – master bias

Mean stability

OpSim run: 1824 dark exposures (12-h run)
15-s (1628) and 30-s (196) exposures

2024 is gonna be a lot of fun

Euclid early commissioning test images, showing an image by the VIS instrument (visible light). The full focal plane of VIS consisting of 36 detectors is shown on the left, and one detector in higher resolution on the right.