Update on the CCOB Wide Beam projector

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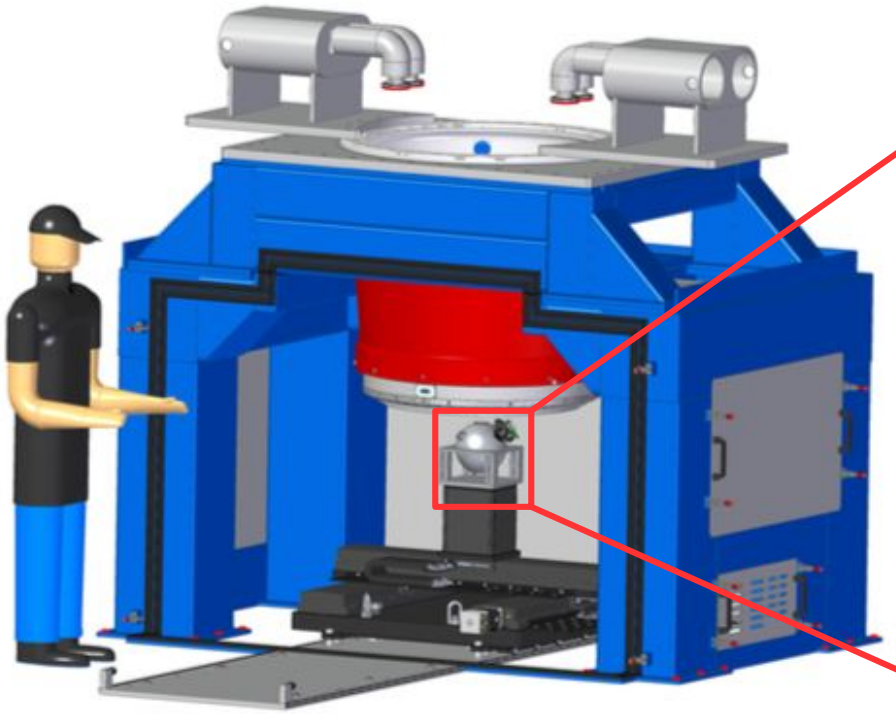
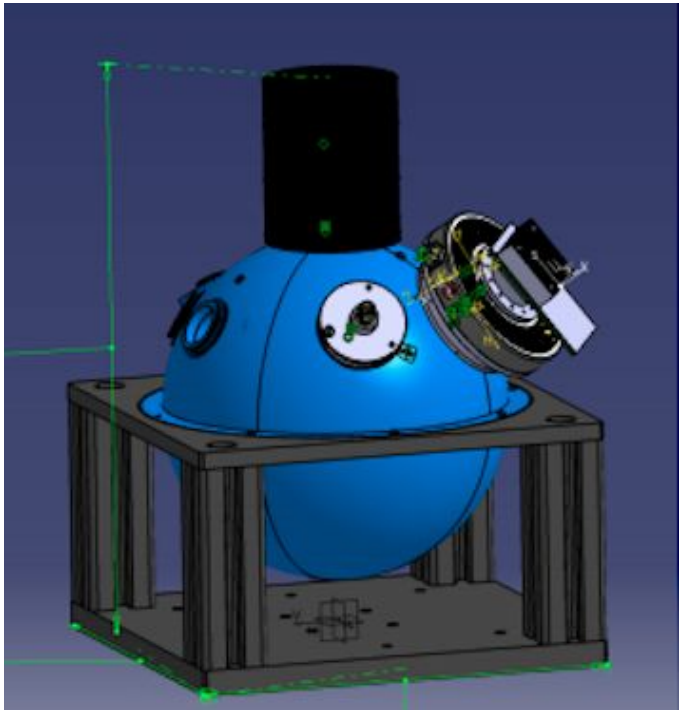
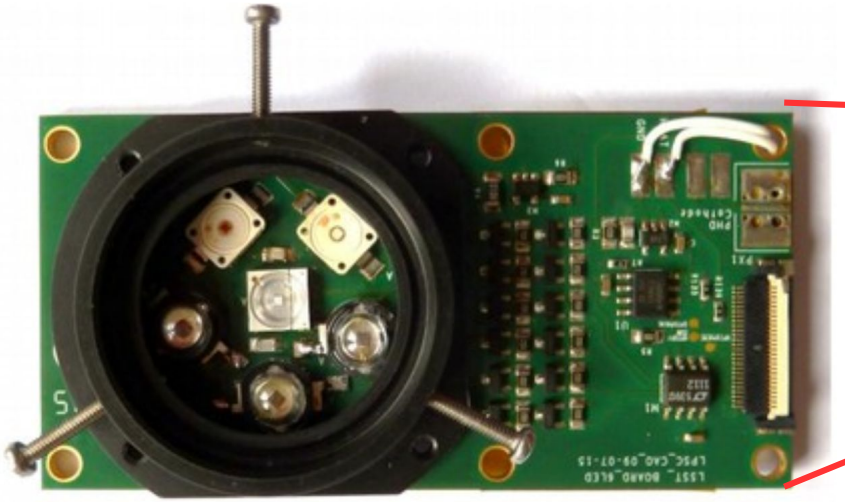
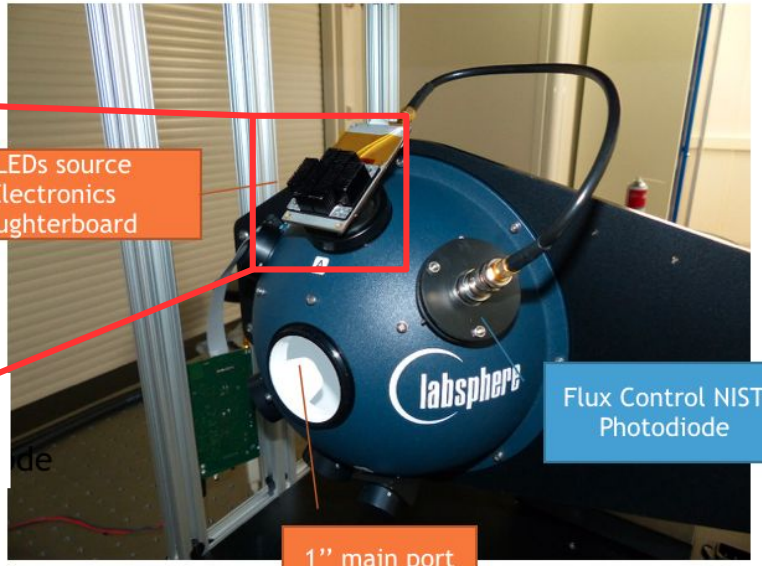
CCOB-WB design









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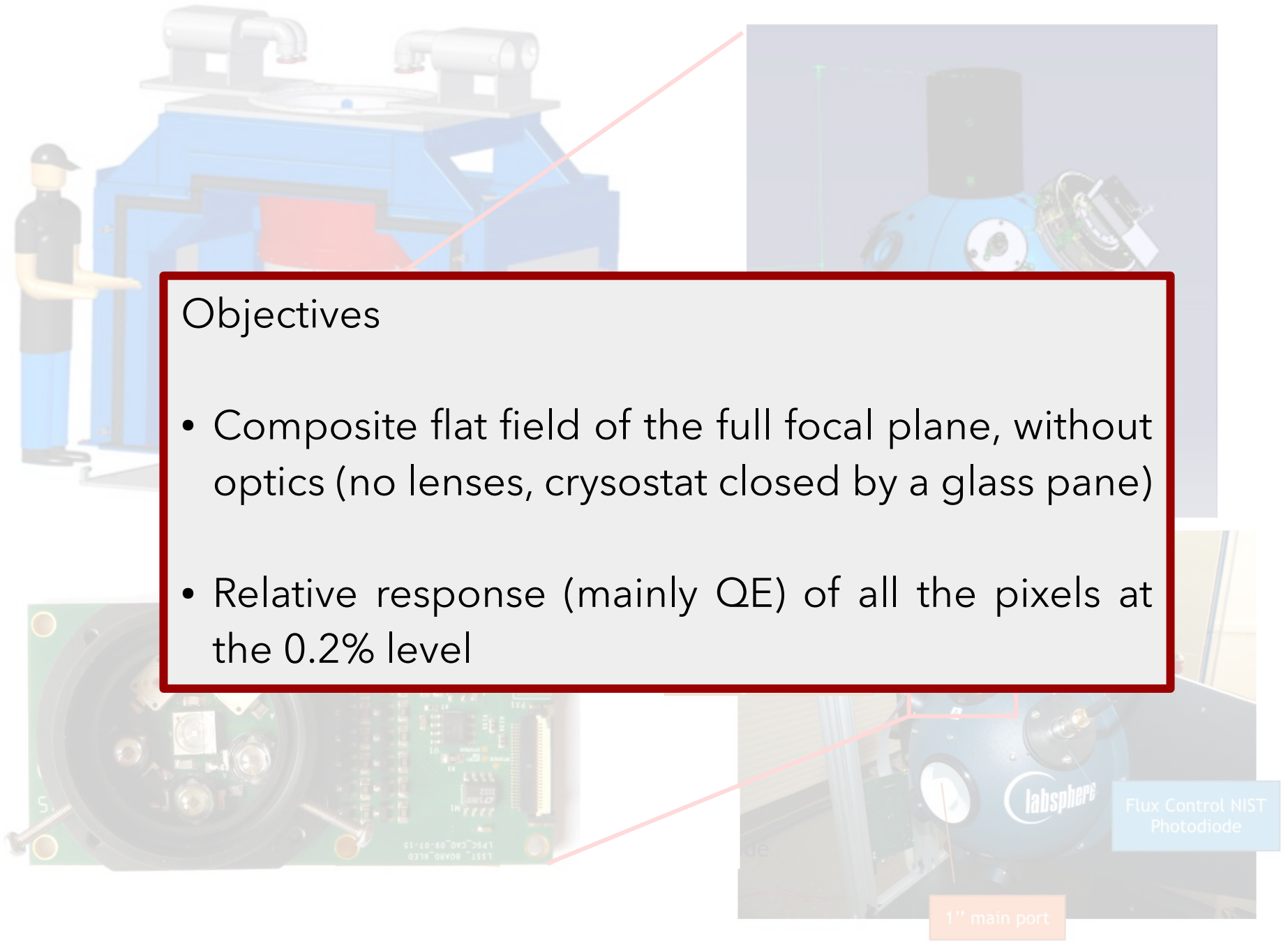


Objectives

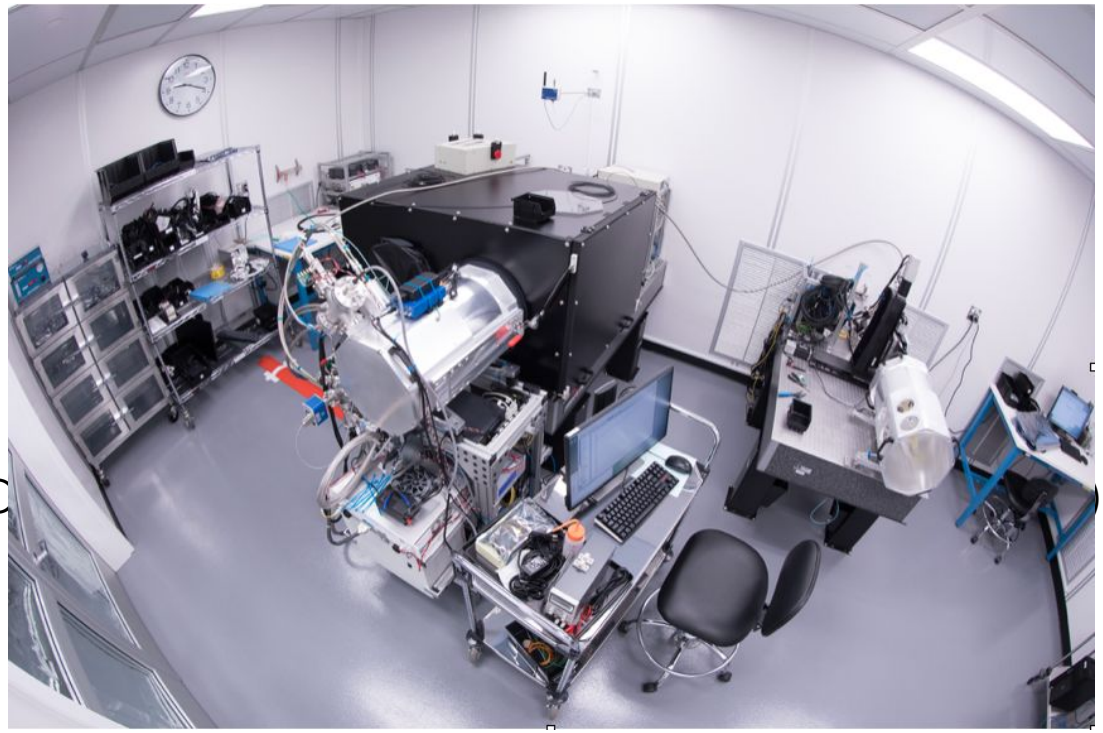
- Composite flat field of the full focal plane, without optics (no lenses, crysostat closed by a glass pane)
- Relative response (mainly QE) of all the pixels at the 0.2% level

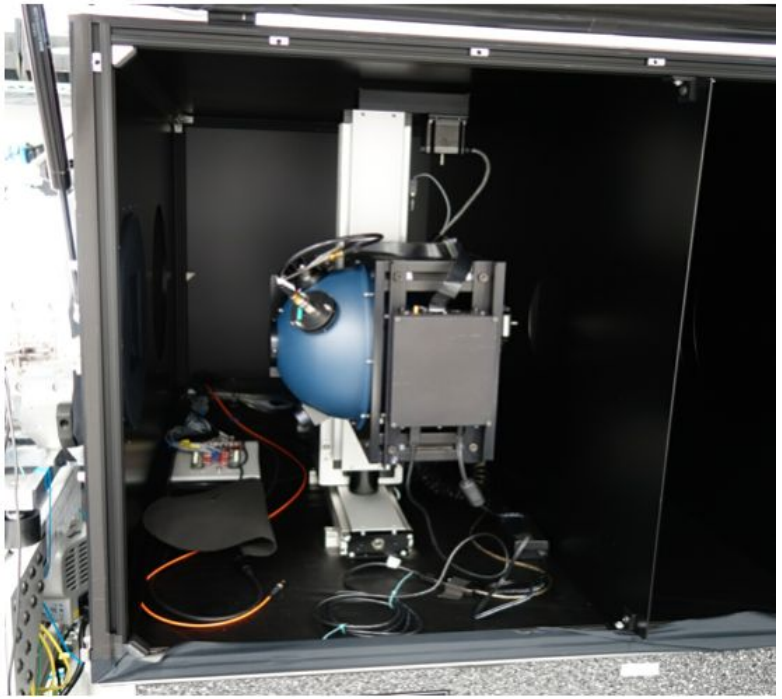
CCOB-WB requirements

#	Requirement	Solution	Verification method	Compliance
1	CCOB Wide Beam ~ 40 mm diameter (~1ccd)	8" integrating sphere, 1"port, ~17cm from sensors. (Baffling available)	Test	C
2	CCOB shall produce light sampling each of the LSST filter bands	One LED in each band	Design	PC ("y led"overlaps in z band)
3	All illumination sources must be capable of being turned off	Electronic switch (Shutter option also available)	Design/Test	C
4	Internal accuracy and repeatability of the beam flux is required to be 0.2% for the g,r,i and z filter bands	- Mean beam flux controlled by NIST photodiode - Beam profile stability checked for expected ambient temperature variations	Test	C
5	Cleanliness	Components shall be cleanable for class 1000 clean room operations	Analysis	C

CCOB@TS8 April 2018 (RTM-006, e2v)

C

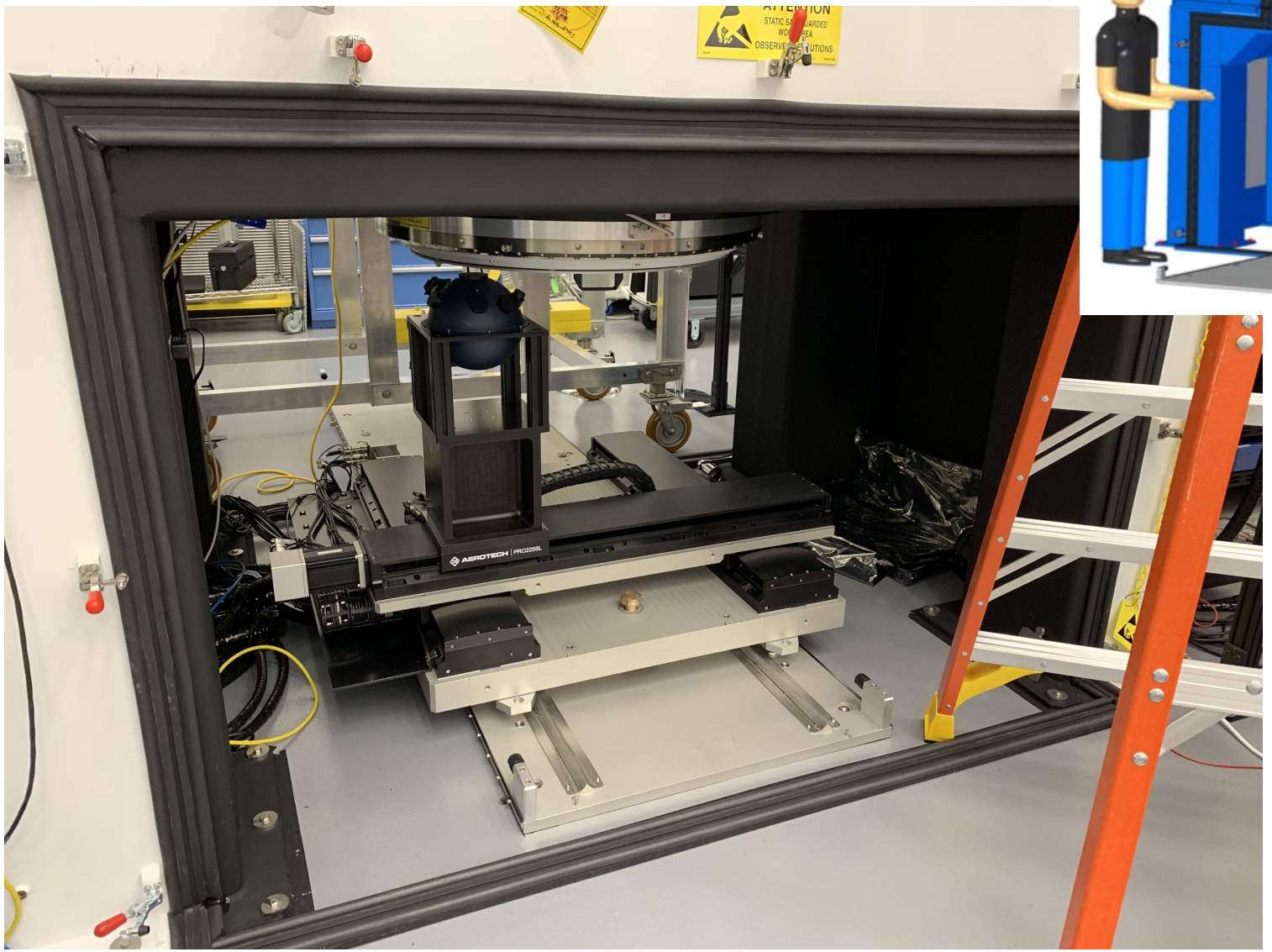


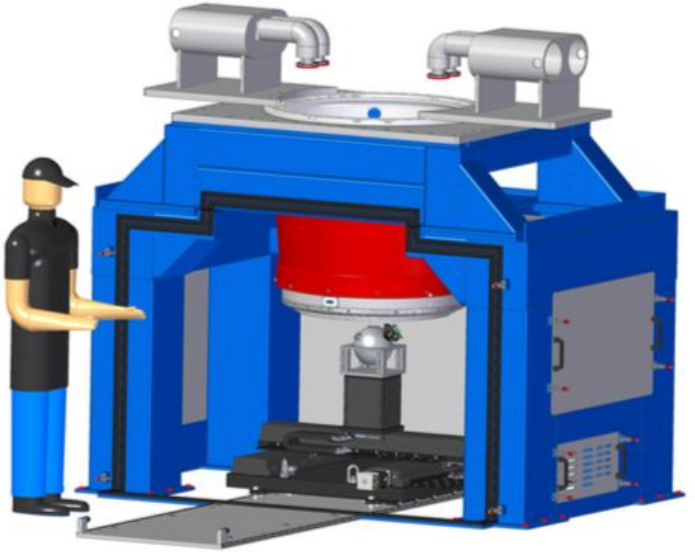


See slides from last LSST-France meeting for stability results + CCOB base analysis

CCOB@BOT March/April 2019 (2 ETU EO testing, ITL)

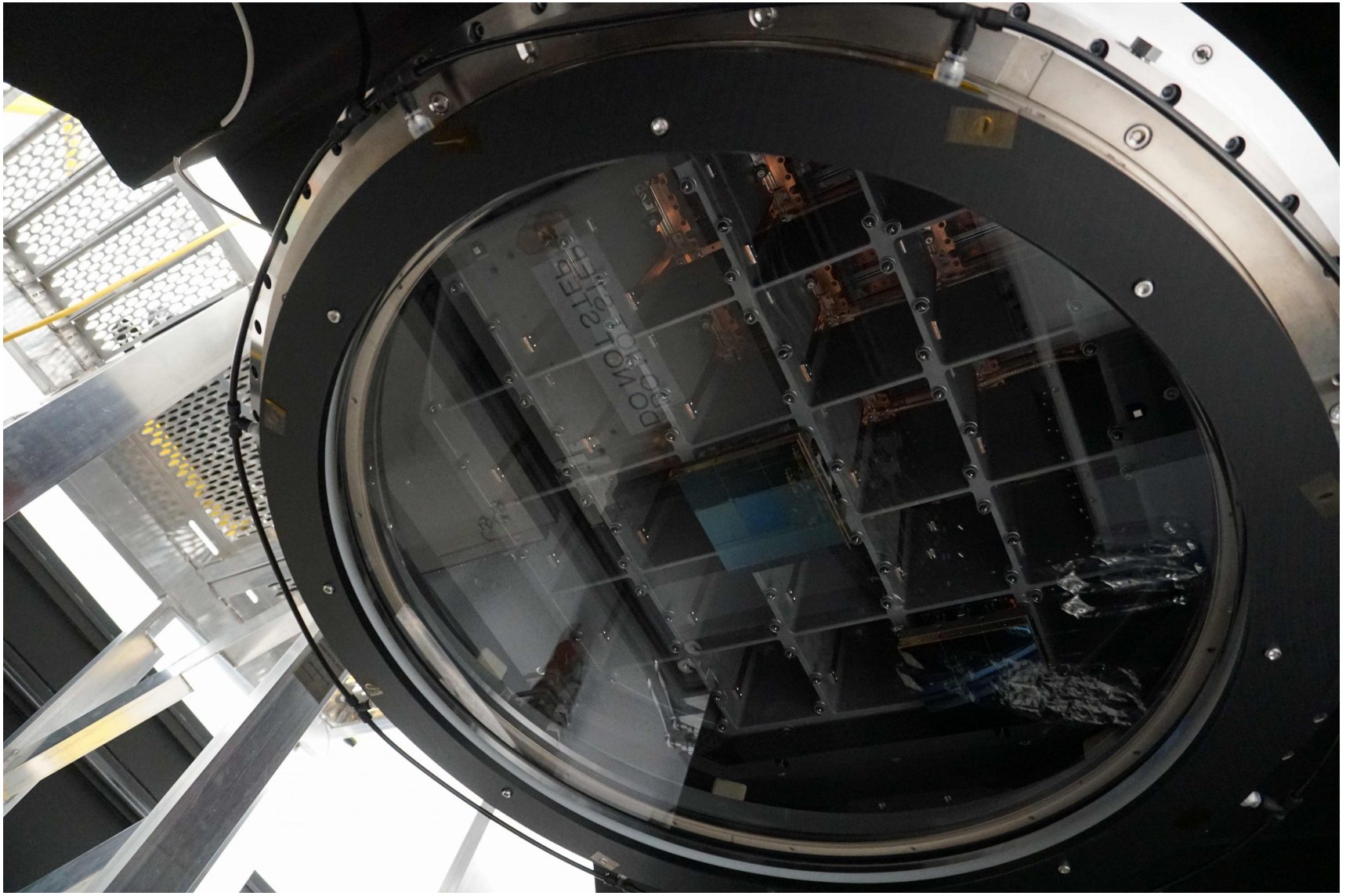
L. Eraud + CC @ SLAC



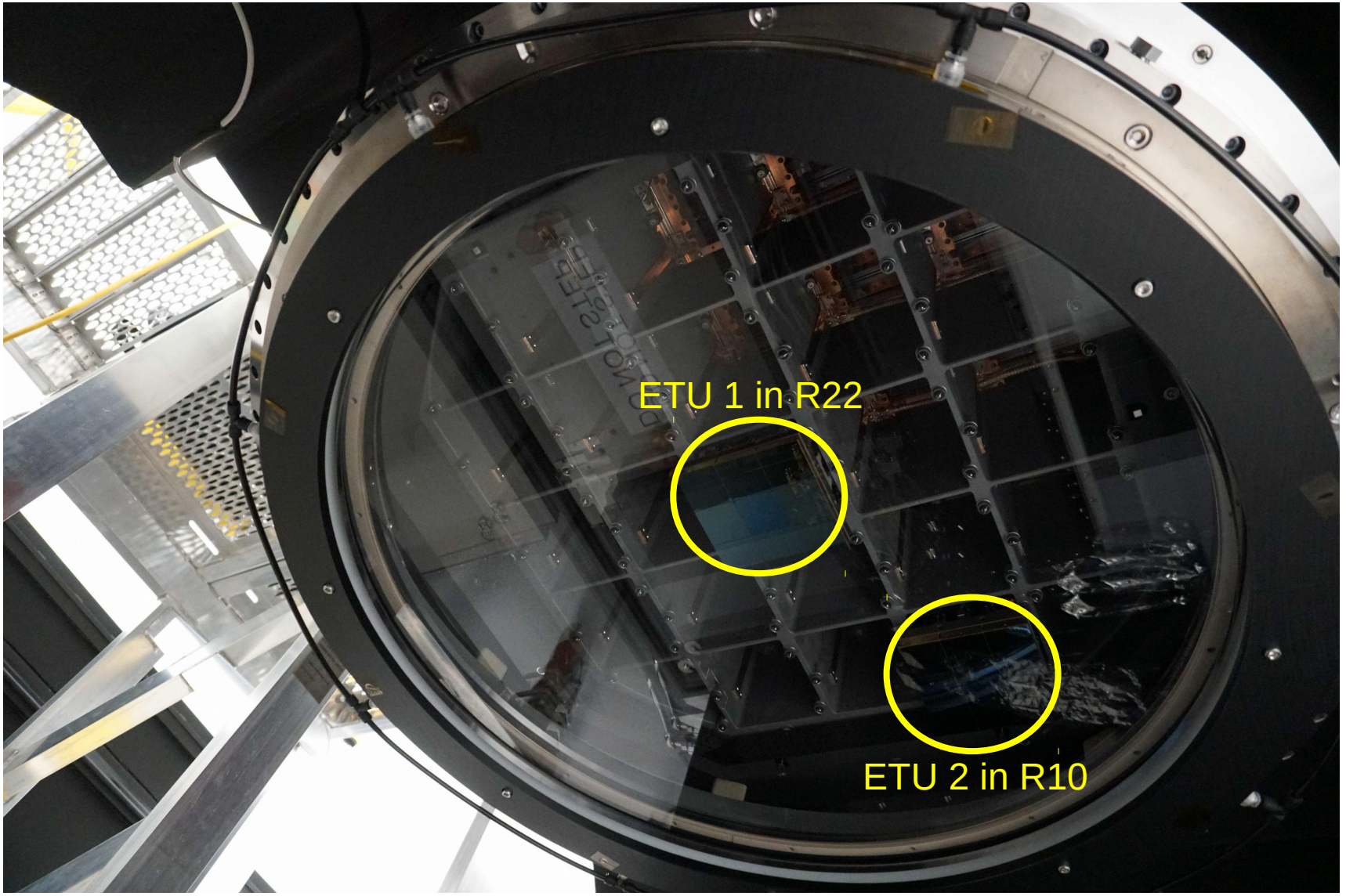


- CCOB “software update” on CCS
- Increase dynamic range of the control photodiode
- CCOB height adjustment

CCOB@BOT April 2019 (2 ETU EO testing, ITL)

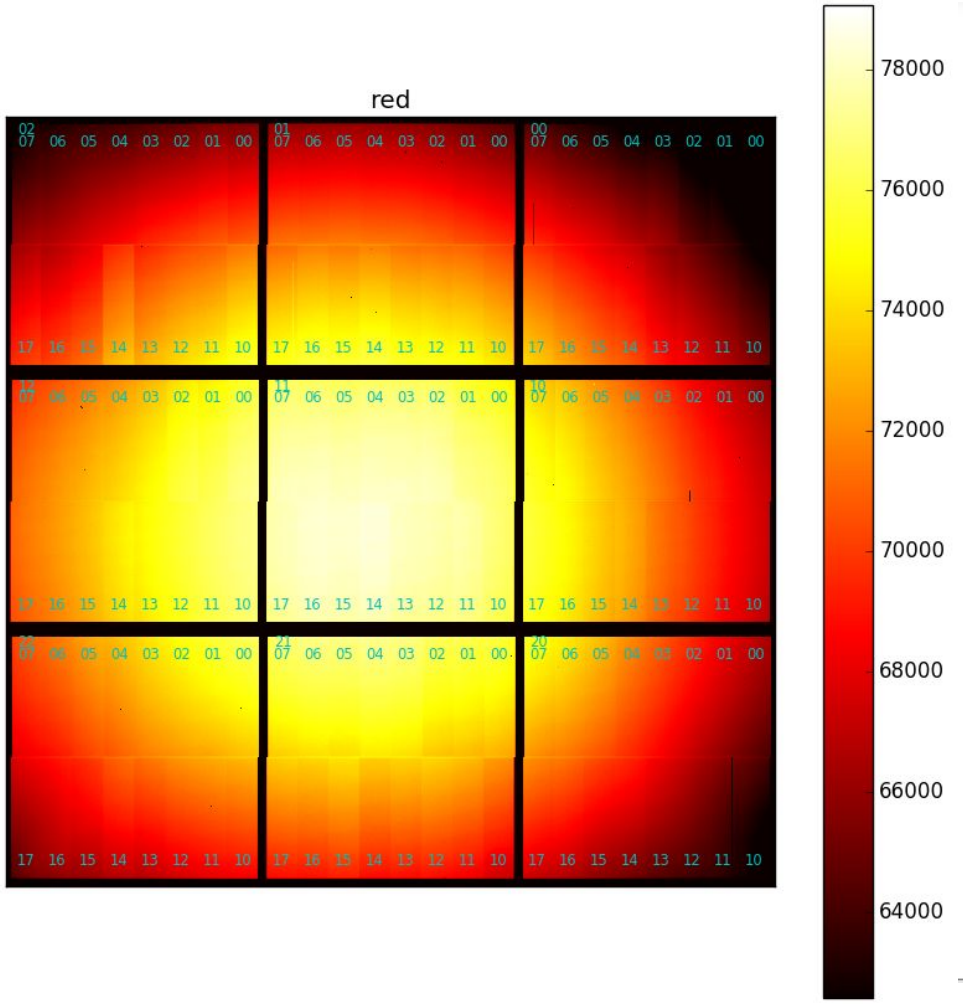


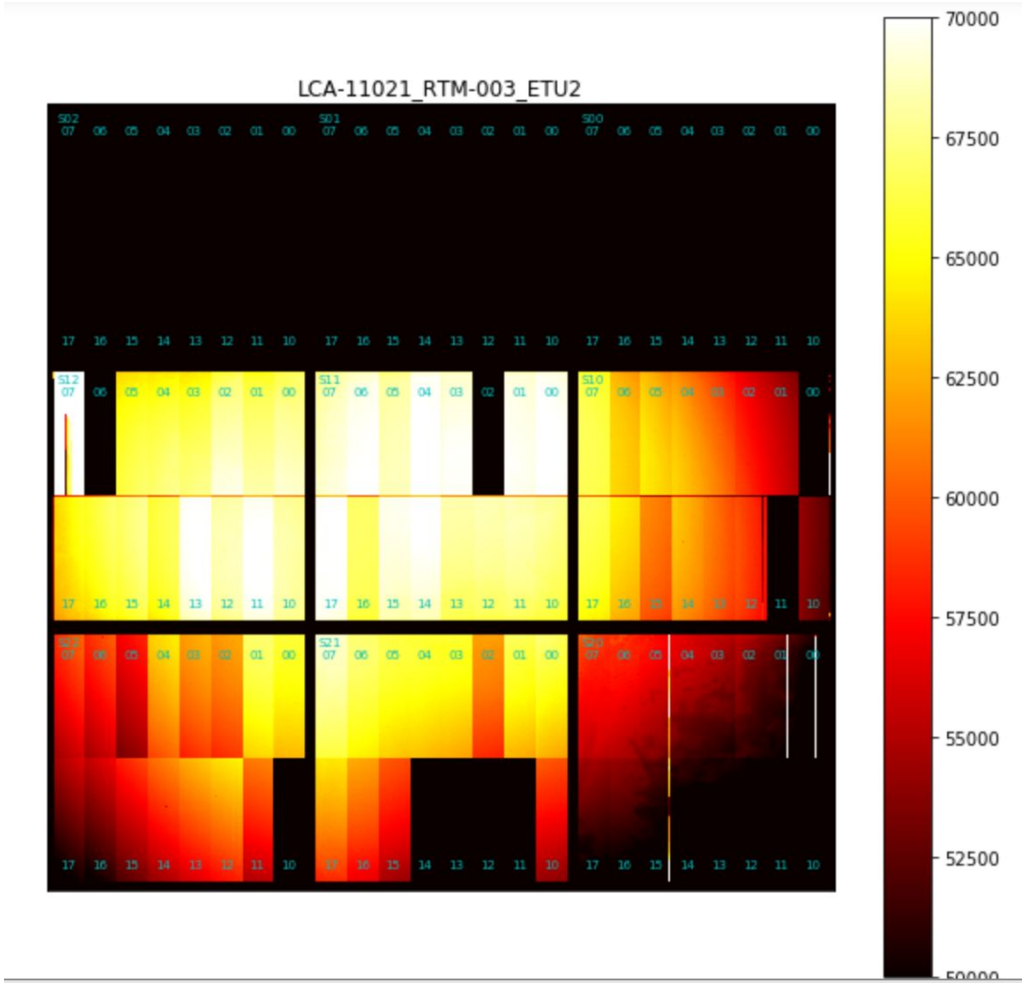
CCOB@BOT April 2019 (2 ETU EO testing, ITL)



RTM006 (science raft) at TS8 vs ETU2 on the BOT

CCOB red beam (e-/pixel, bias subtracted, gain-corrected)

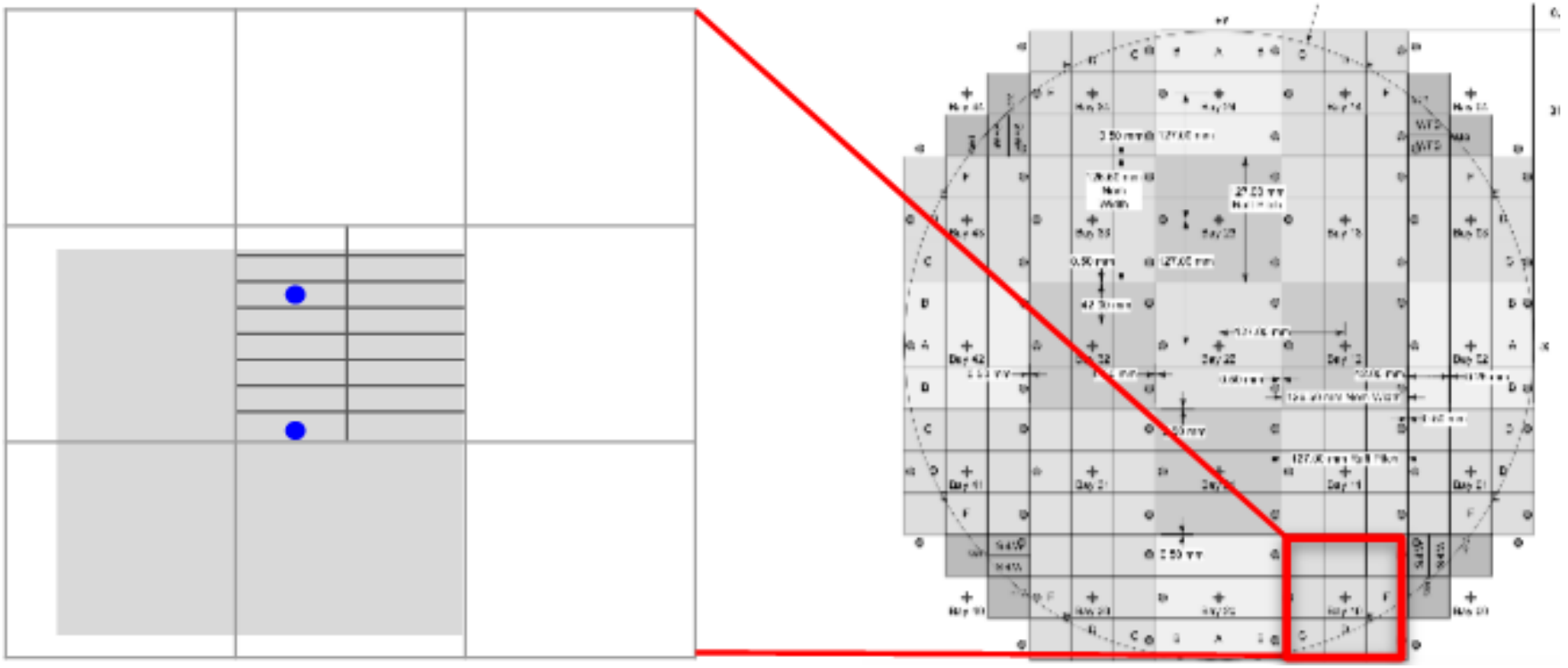




ETU testing → checking that all runs OK on the BOT

CCOB beam reconstruction from scan

12 x 12 scan for all LED and one high res 60 x 60 scan

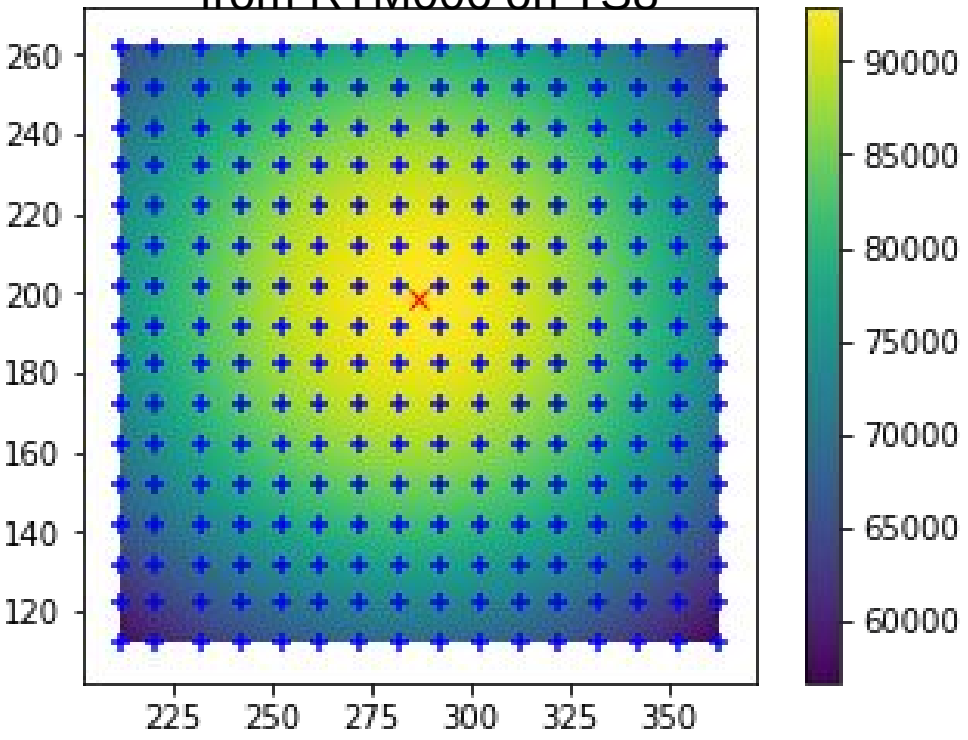


Timeout issues in the acquisition → lot of effort at SLAC to gather this data (thanks Yousuke and Seth)

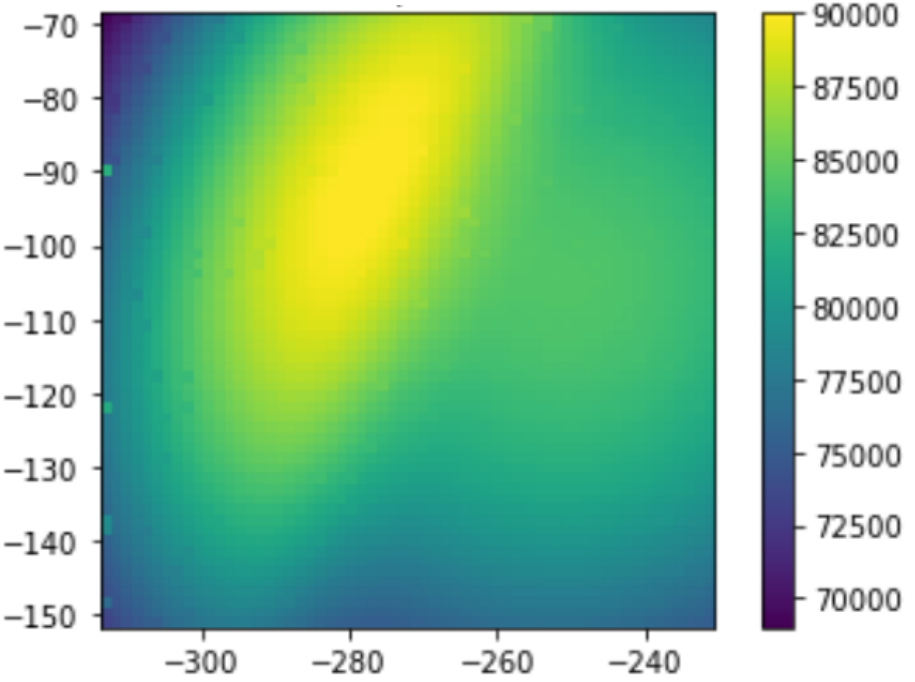
CCOB beam reconstruction from scan

Beam model: reconstructed from a 30 x 30 pixel bunch

from RTM006 on TS8



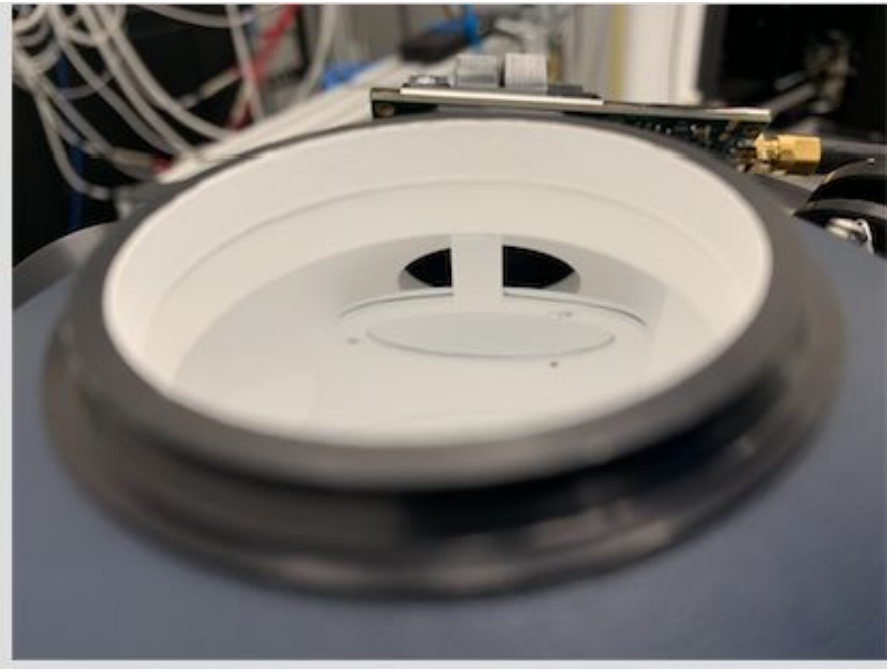
From ETU2 on the BOT



Something's happening on the BOT that was not happening before

Possible origins of the problem

- Bug in the reconstruction code?
- Issue with the recorded coordinates (offset parameter increment at every step?)
- Direct light coming out of the integrating sphere? Could the diffuser sheet have moved or be torn (happened in the past)

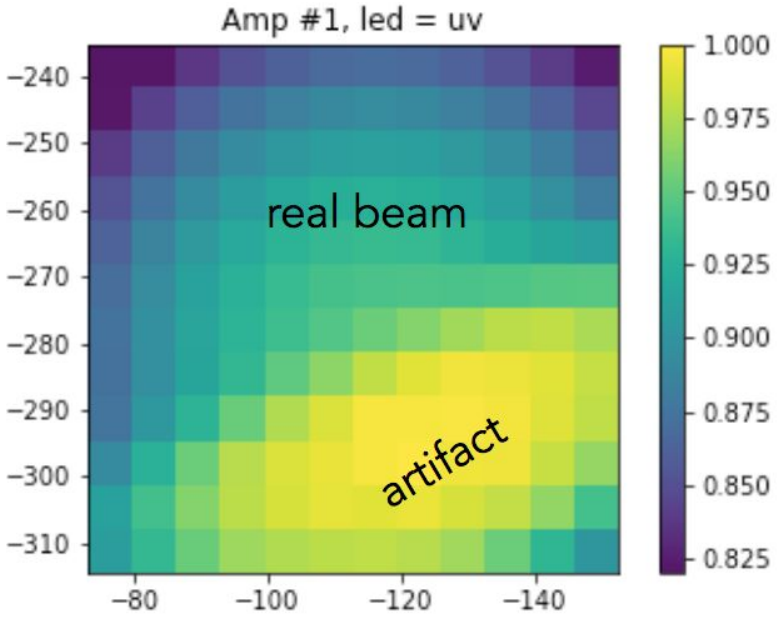


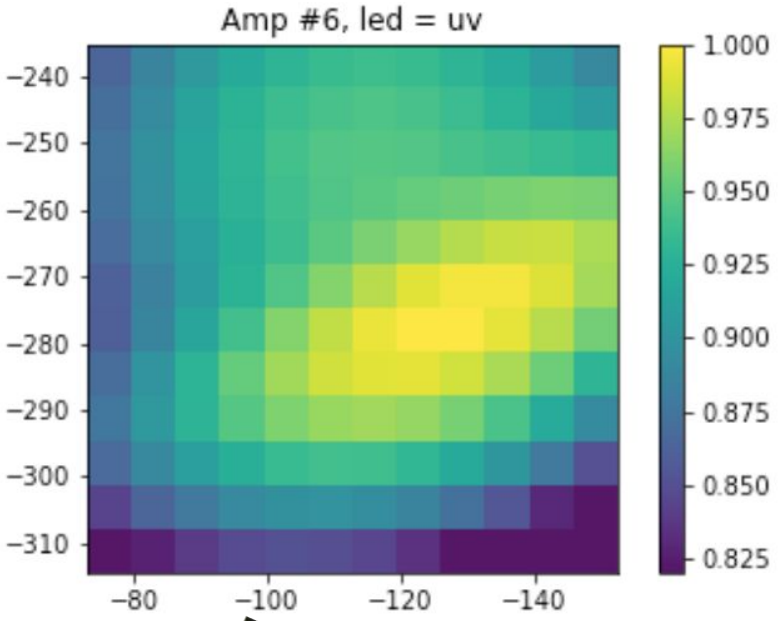
Possible origins of the problem

- Bug in the reconstruction code?
- Issue with the recorded coordinates (offset parameter increment at every step?)
- Direct light coming out of the integrating sphere? Could the diffuser sheet have moved or be torn (happened in the past)
- Relection on the edge of the cryostat? Most likely, still have to confirm

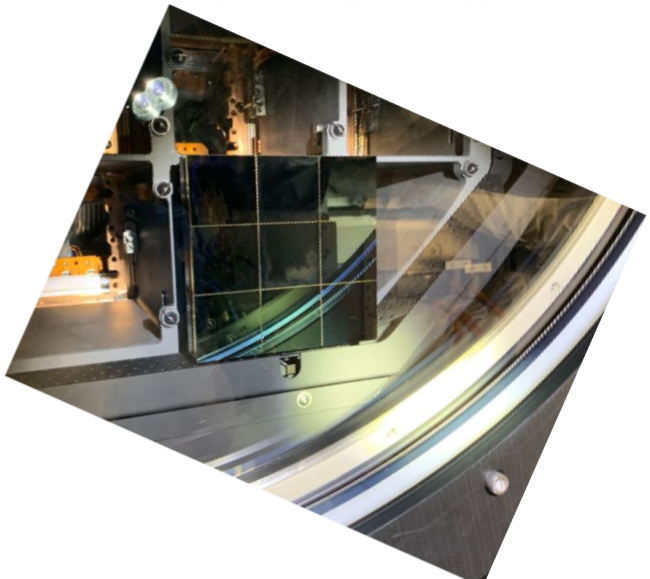
Reflection on the edge of cryostat ?

Artifact = reflection on cryostat edge (inner metallic ring)?





- Excess feature at 5-10% level
- Less prominent when reconstructing the beam further away from the edge
- Orientation matching circular edge of cryostat



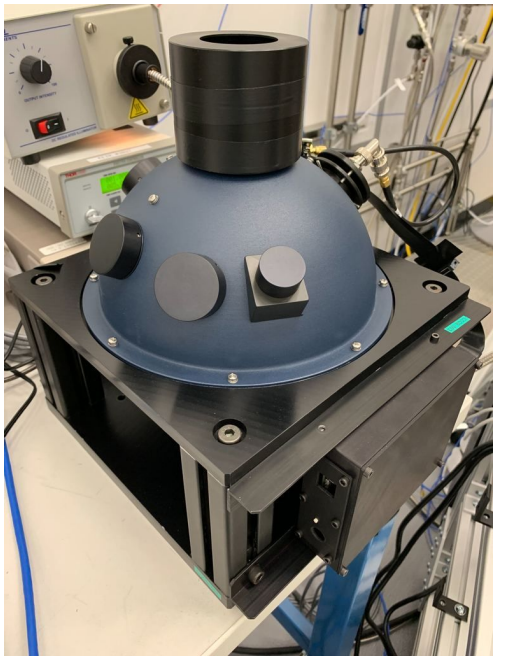
Conclusions: actions for run #2

- Perform 12x12 scan using R22

  → if reflection, feature should disappear

- If reflection hypothesis is confirmed:
  - Either the culprit area can be masked/coated → apparently not feasible
  - Or need to use the baffle provided with the CCOB to limit wide opening angle of the beam

  → need to use the smaller stand for the CCOB



#cam-ir2-ops
#cam-ir2-bot-data

Update on the CCOB Narrow Beam projector

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M. Marton, E. Largorio

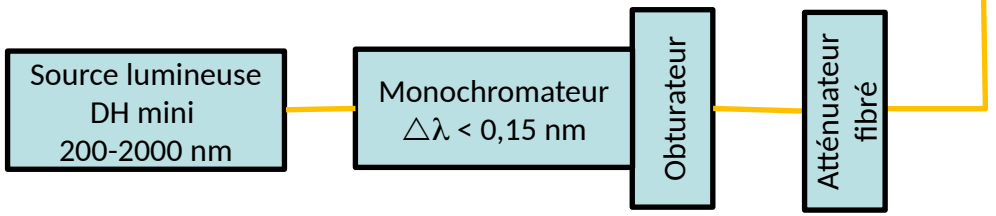
Objectifs et design

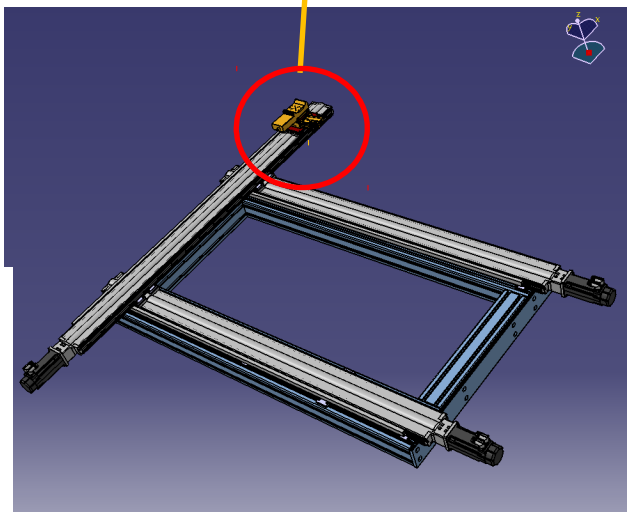
CCOB-NB: Commissioning of the integrated camera

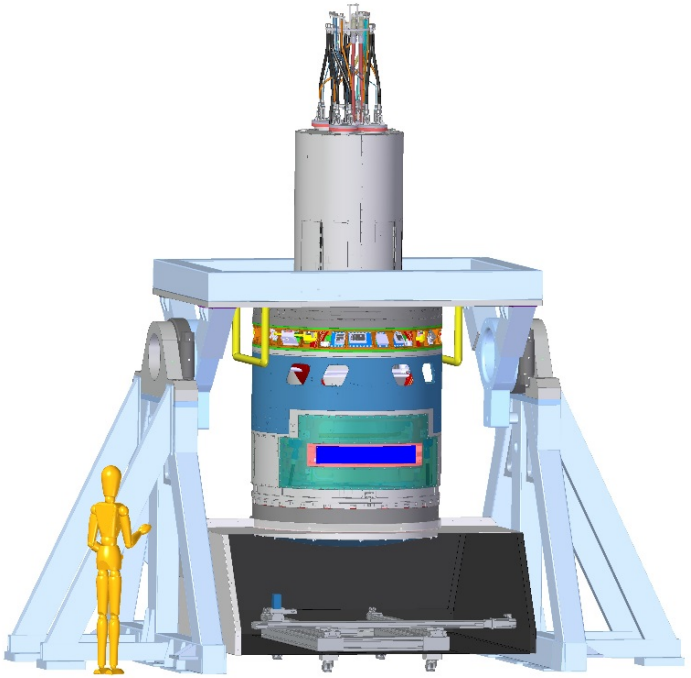
- Illumination of the focal plane from a variety of incident angles in the 6 spectral band of LSST

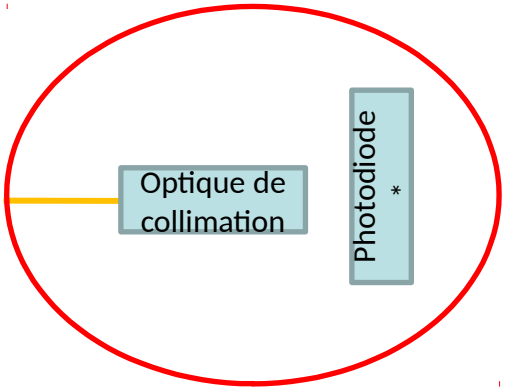
  → Check optics alignment/tilt from analysis of the ghost images

- ~2mm-wide monochromatic beam ($\Delta\lambda < 1$ nm)
- Delivery to SLAC: T4 2019









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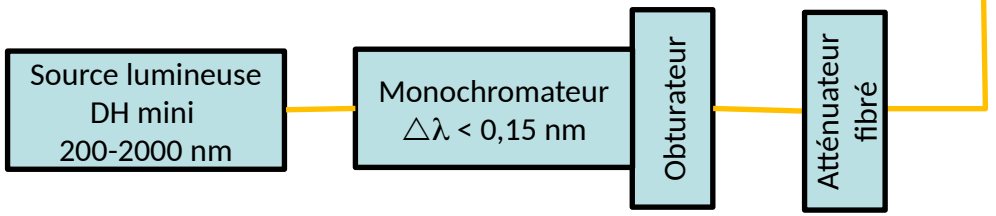
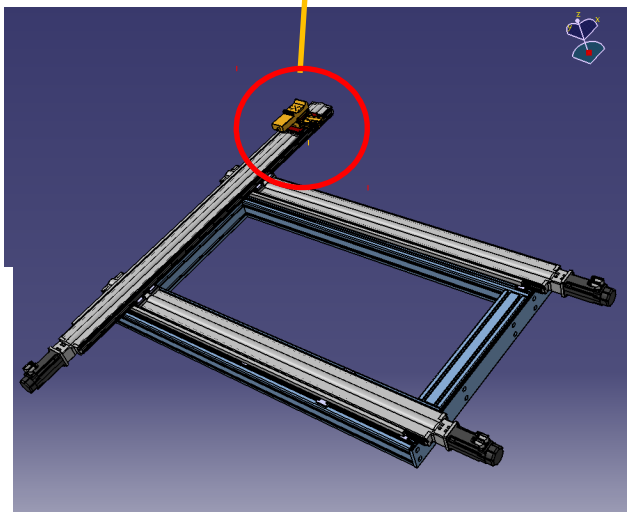
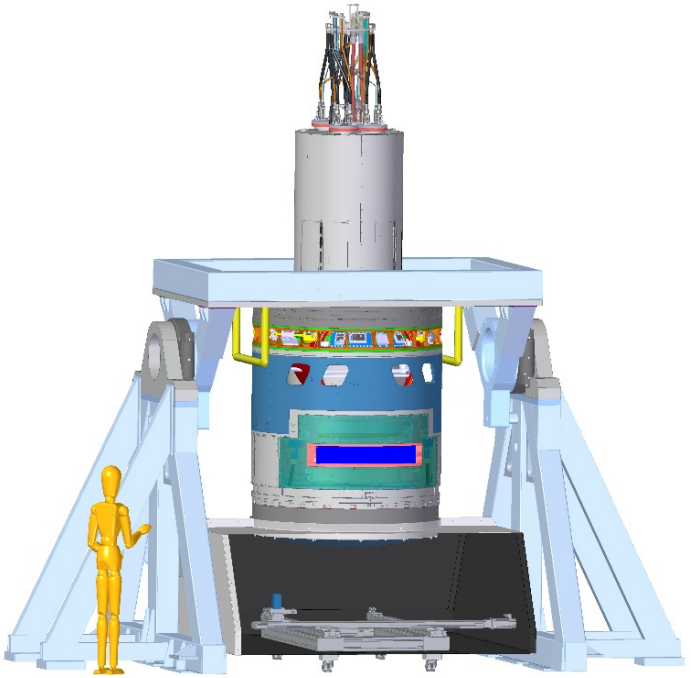
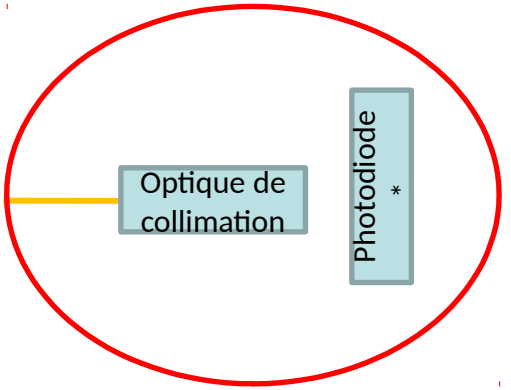


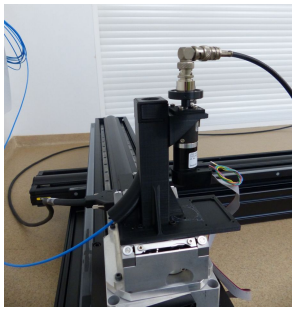






Since the last meeting…

1. All elements of source have been delivered by the vendor:
   - Lamp
   - Monochormator
   - Optic fibers



2. Fiber support has been printed

3. All elements to characterise the source have been delivered:
   - Beam profiler
   - Spectrometer

4. Control command work is underway: control of the tables (x-y, rotative, goniometric), monochromator, of the photodiode motorised arm

5. Characterisation of the beam has started:
   - ~1nm resolution achieved at 600nm when using 50µm fiber. Output power to be checked.
   - Will determine final 'configuration' (fiber diameter + power)