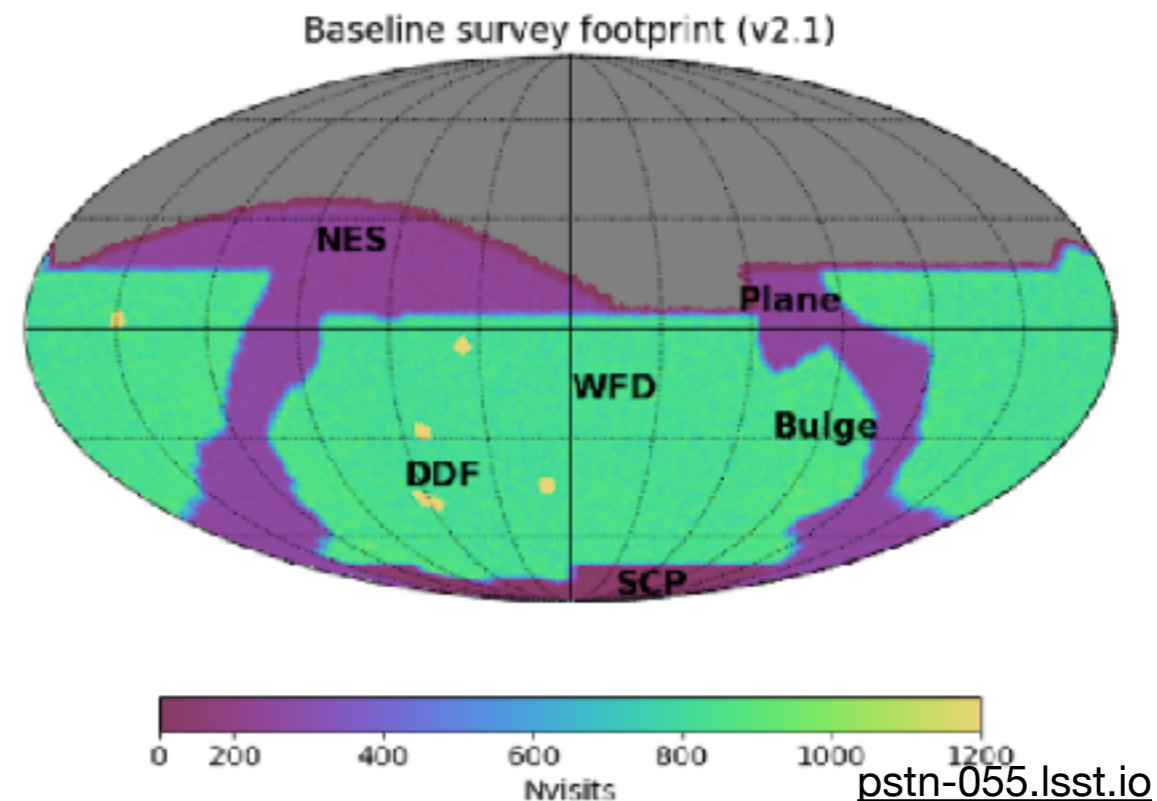
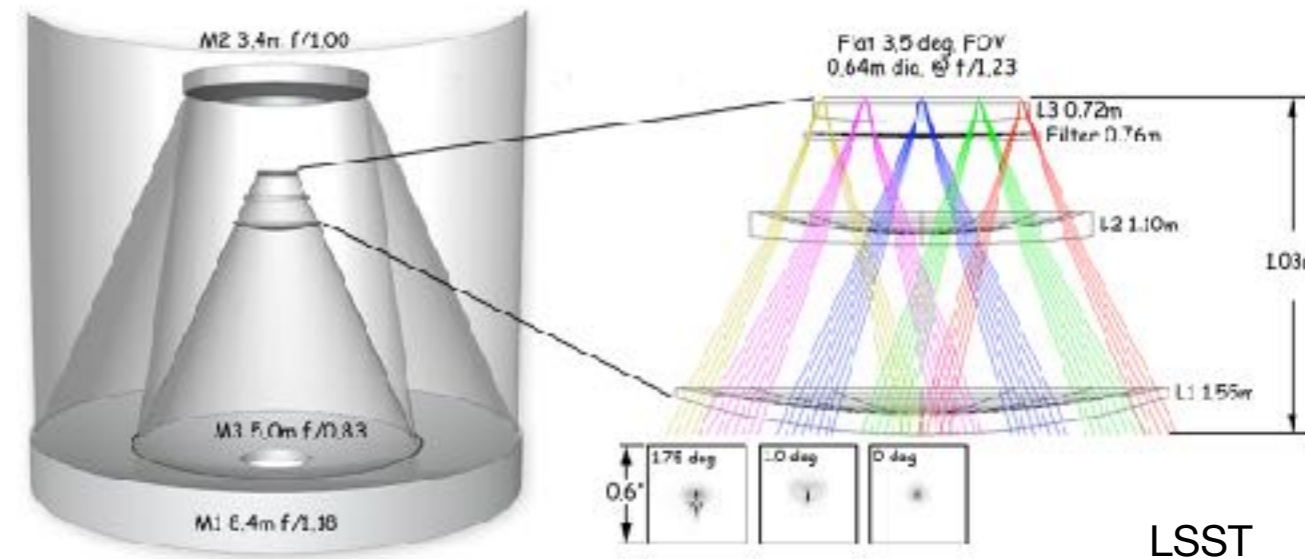


Rubin/LSST status and data right holders

Yousuke Utsumi (SLAC National Accelerator Laboratory)

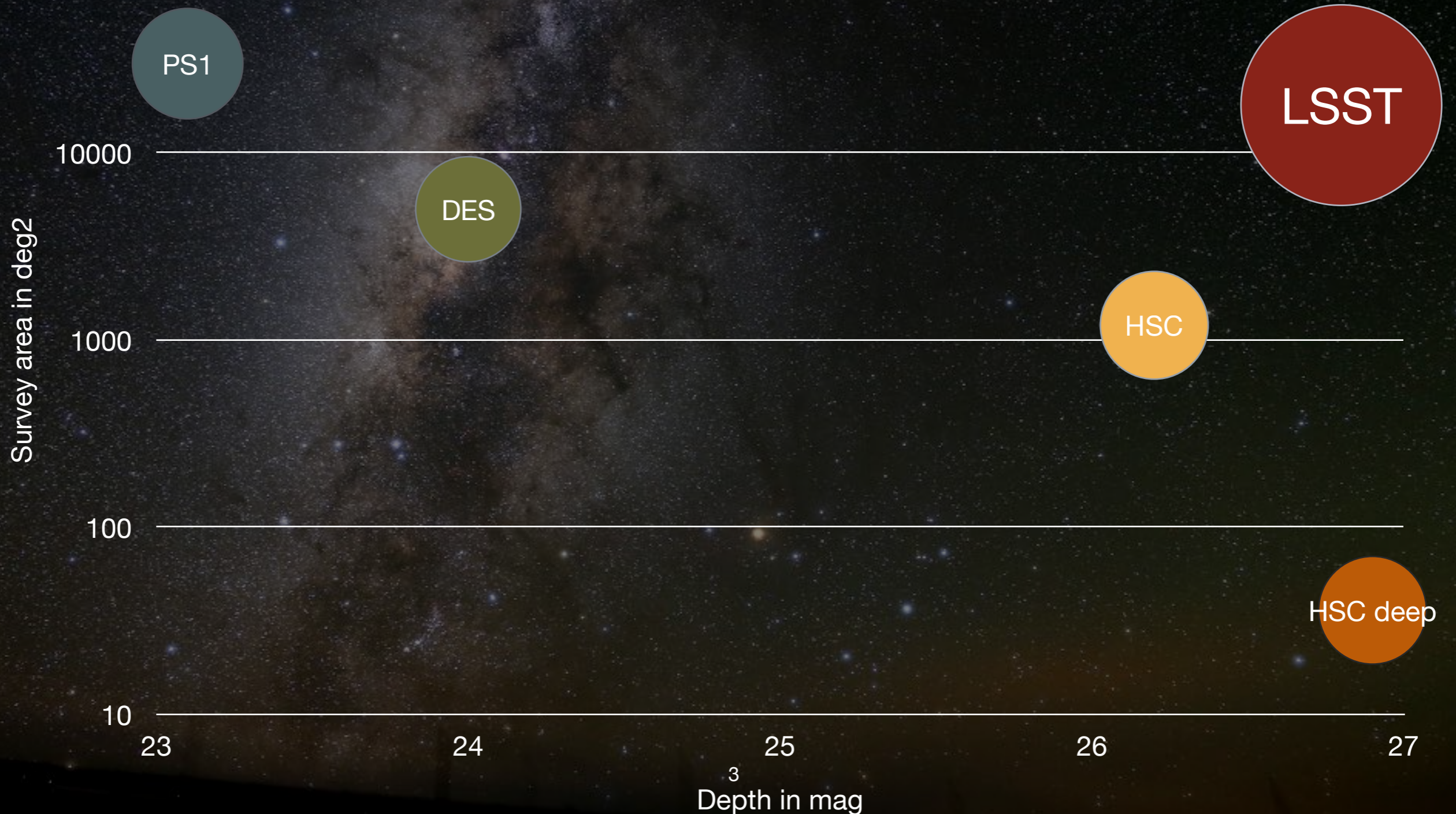
Vera Rubin Observatory's LSST survey

- **8.4m dedicated telescope in Chile**
 - Charles Simonyi Telescope
 - 3 Mirror systems (F/0.83)
 - 3.5deg in diameter
- **LSST Camera (SLAC)**
 - 3 lenses
 - ugrizy “curved” filters
 - 189 CCDs; 3.2G pixel in total
 - ~2 sec readout
- **“Legacy Survey of Space and Time”**
 - 10 years southern sky survey
 - **Deep** ~ 26.8 mag
 - **Wide** ~ 20000deg²
 - **Fast** ~ 800 visits per field
 - **“Well-understood source catalog of stars and galaxies”**

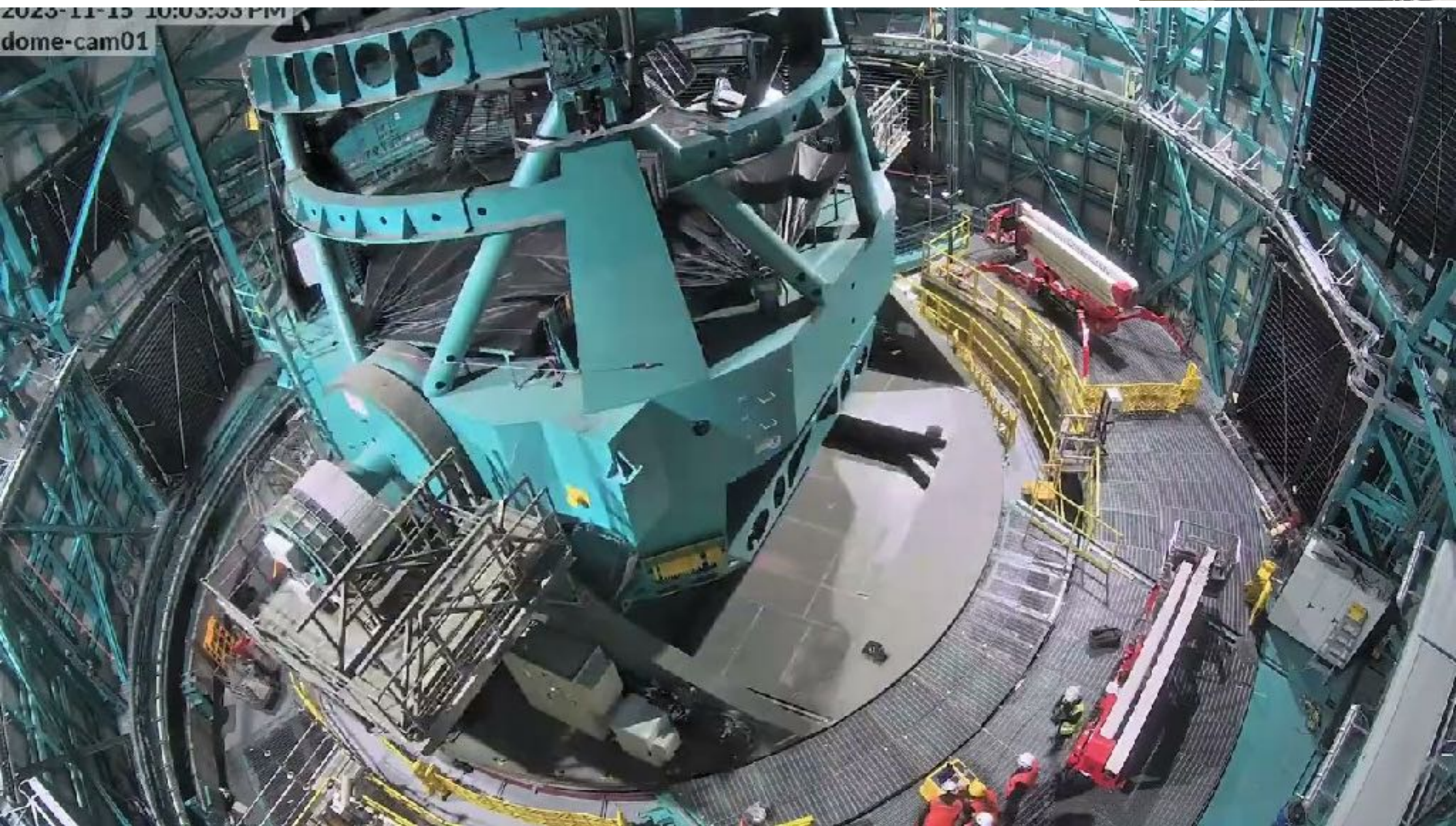


Vera Rubin Observatory's LSST survey

The size is proportional to Etendue



TMA testing in progress

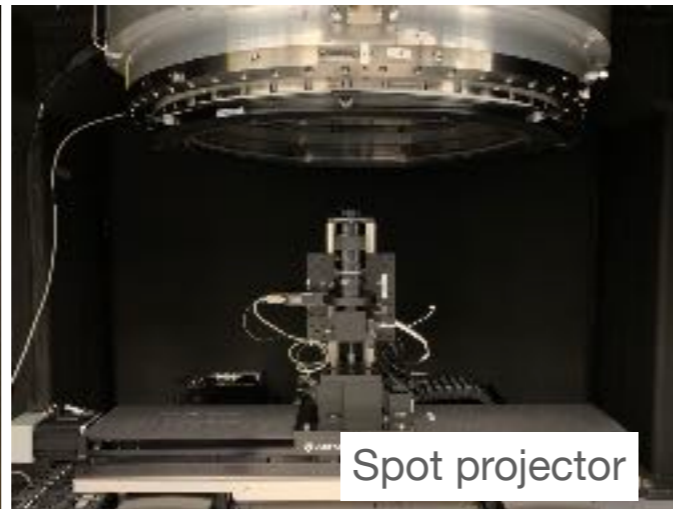




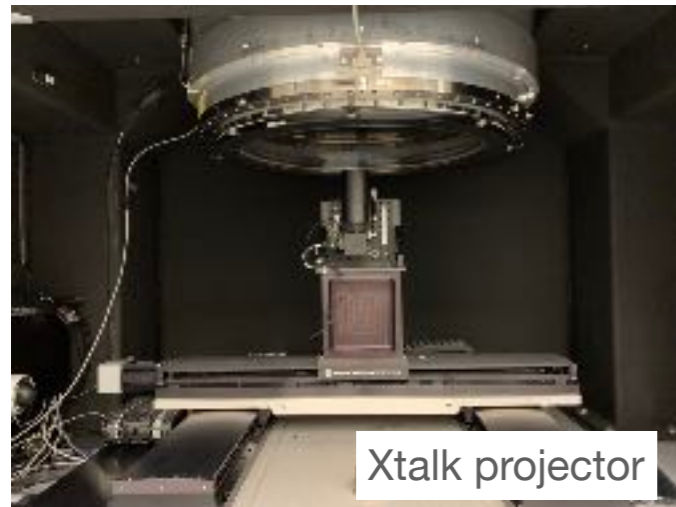
Extensive Camera testing...



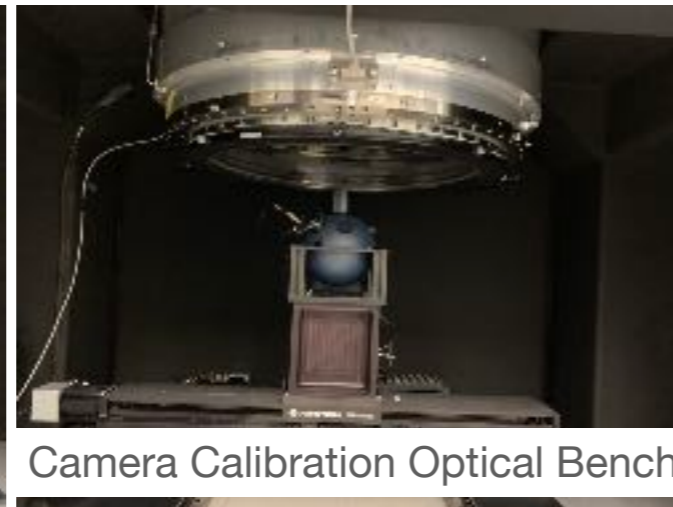
Flat projector



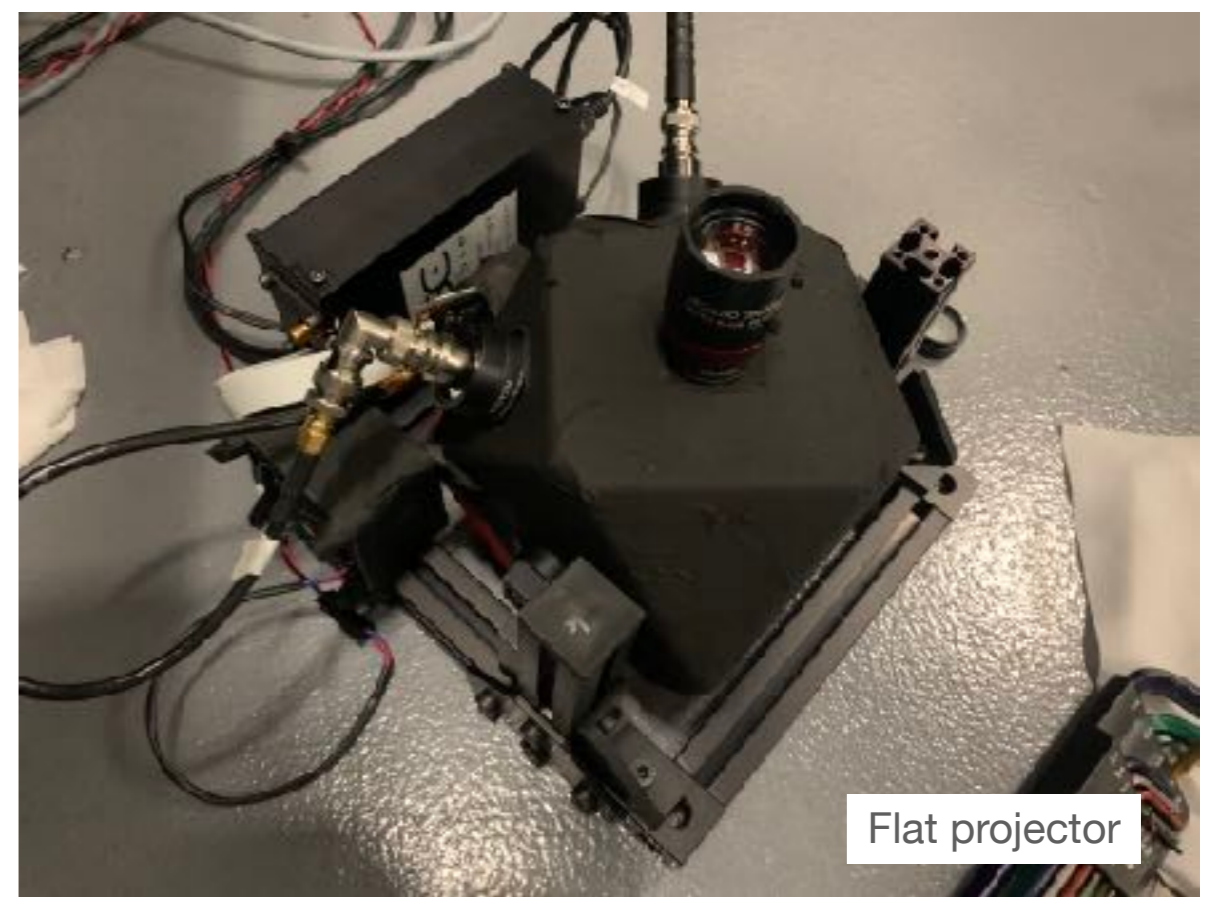
Spot projector



Xtalk projector



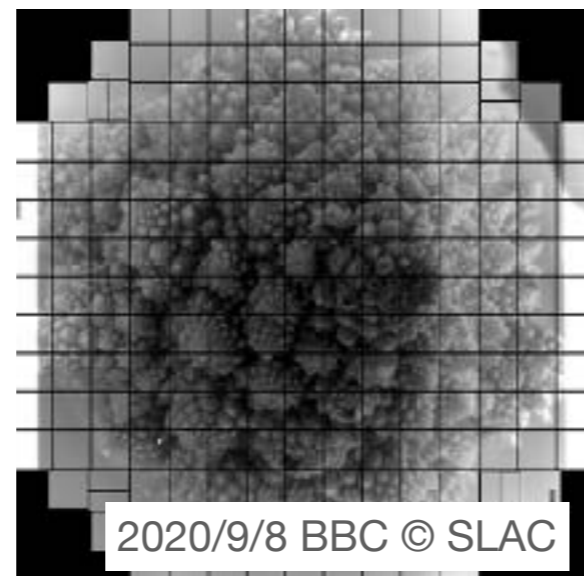
Camera Calibration Optical Bench



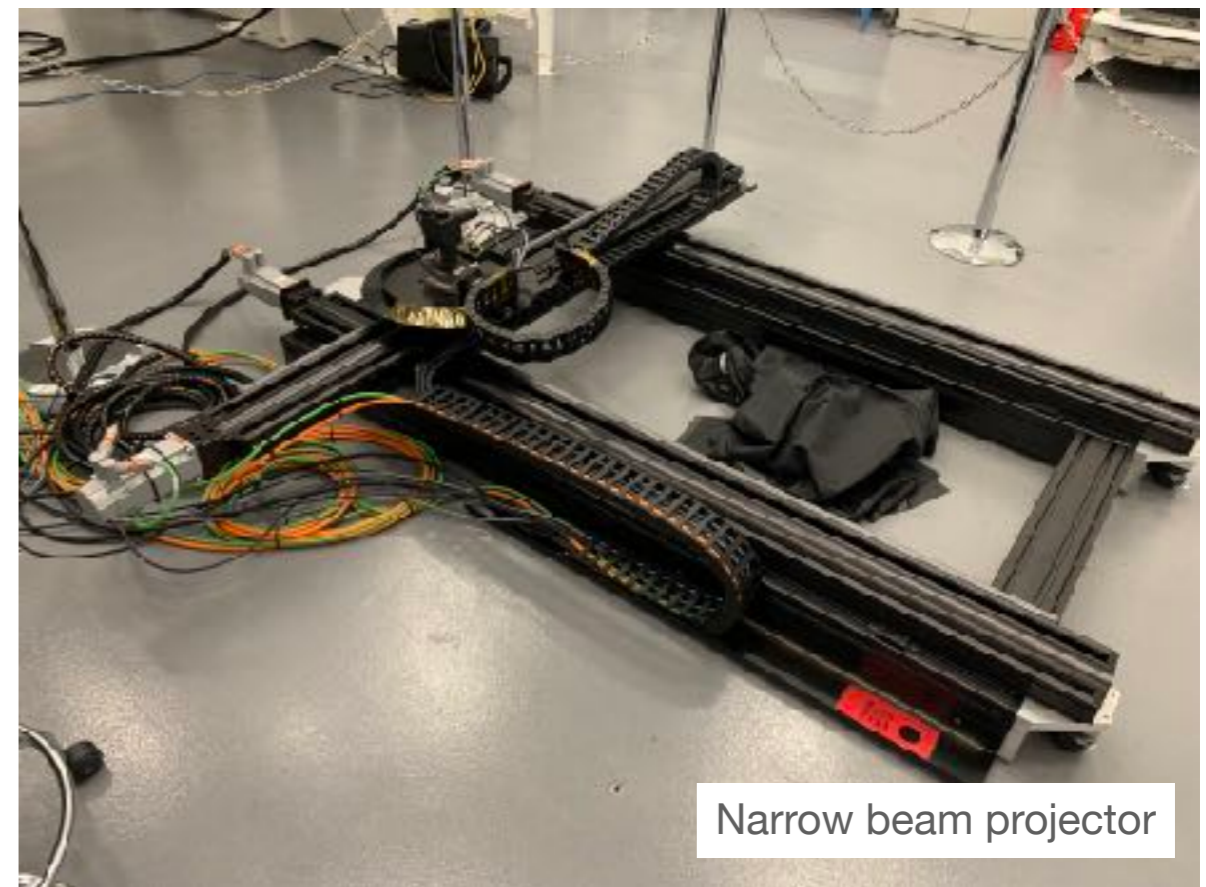
Flat projector



© Jacqueline/SLAC



2020/9/8 BBC © SLAC



Narrow beam projector

Testing in progress

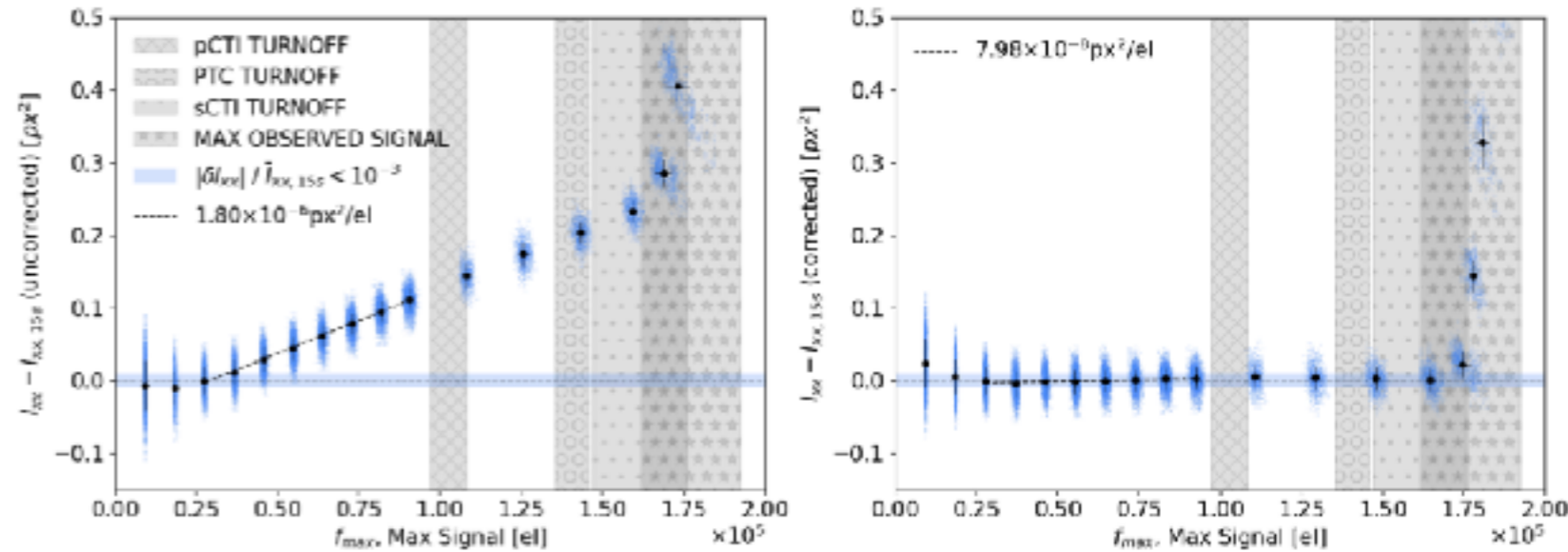
- **Uniform illumination**

- Characterization: Noise, Gain, CTI, linearity, PTC, defects...
- Optimization

- **Structured illumination**

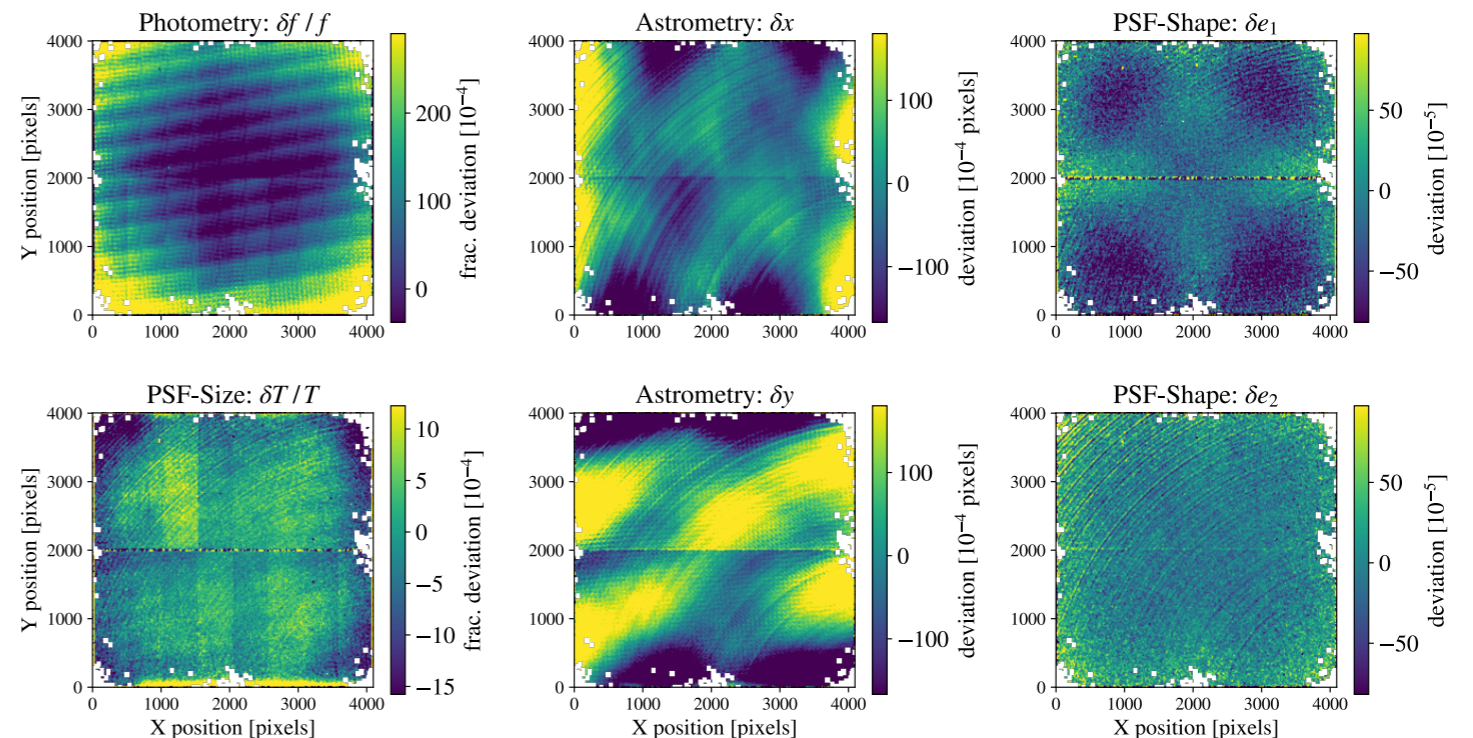
- artificial star measurements
 - surface effect, tree-rings
- X-talk
 - non-linearity, delayed component
 - assessing impact of satellite streak
- Persistency
- **Narrow beam w/ flexible stage**
 - Throughput of Lens+filter+QE
 - Optical alignment by ghosts

Testing “Brighter-Fatter” correction (Broughton, Utsumi et al., submitted)

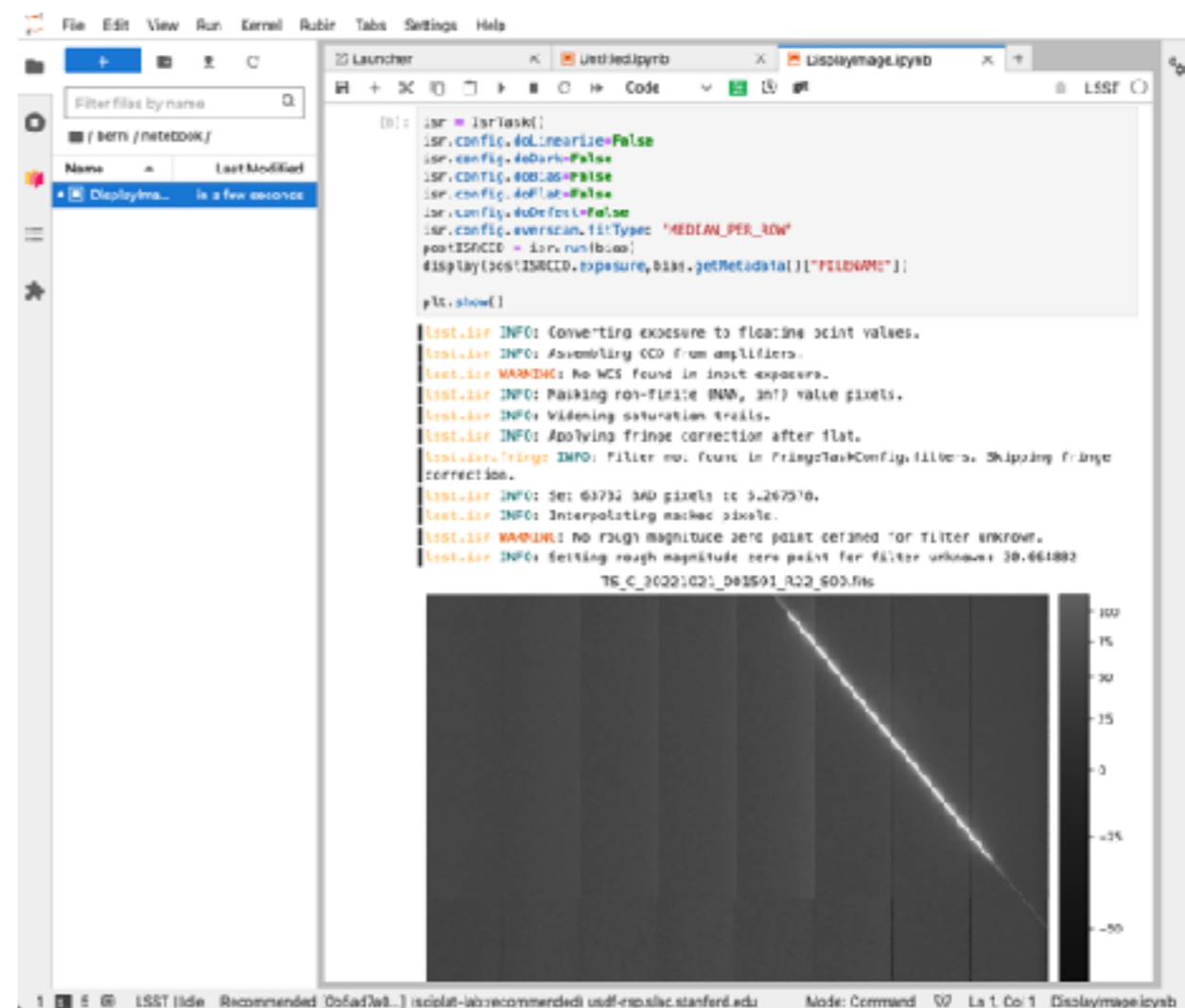
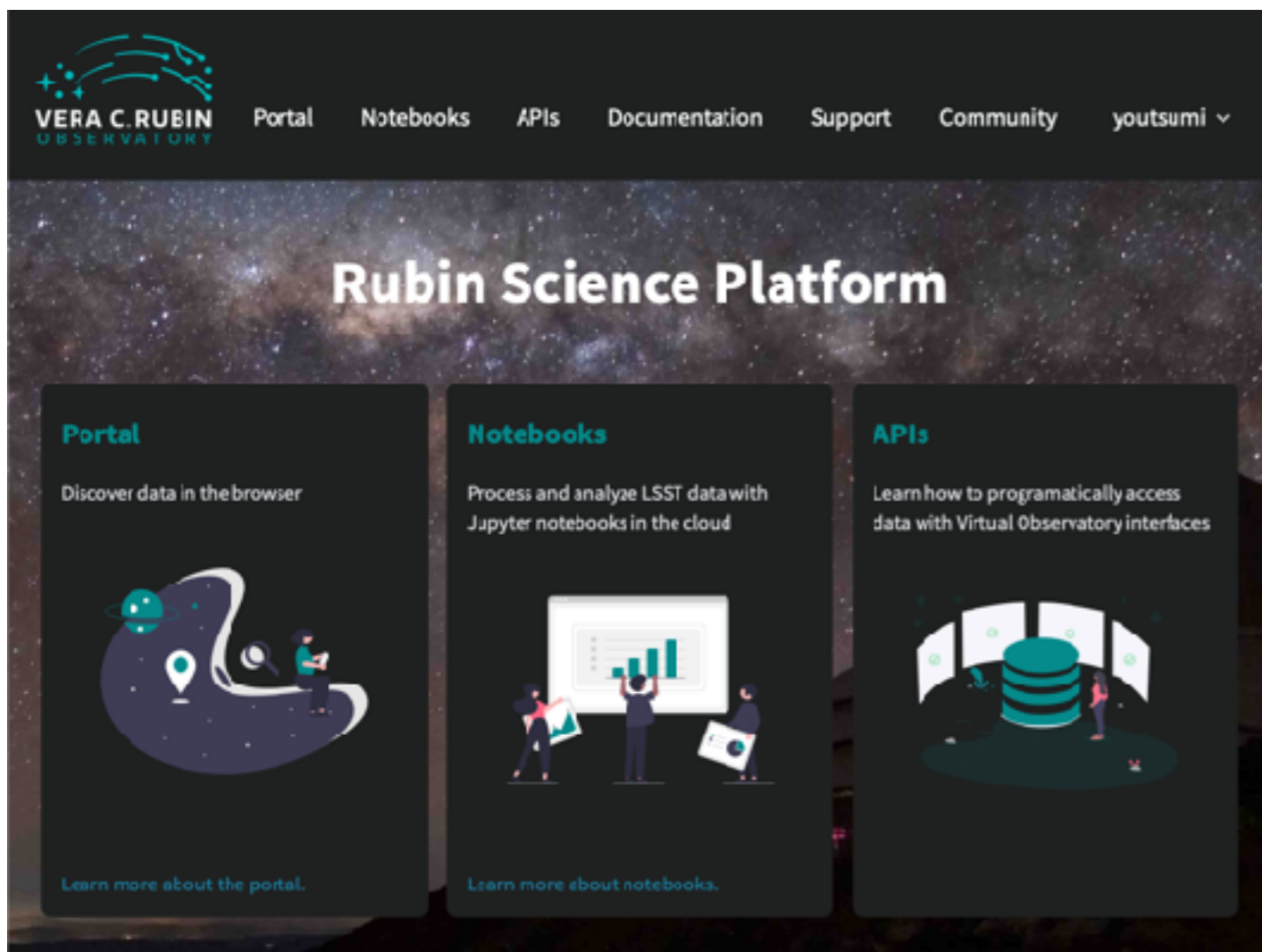


Systematics of artificial star measurement (Esteves, Utsumi et al., 2023)

E2V Sensor - R24-S11

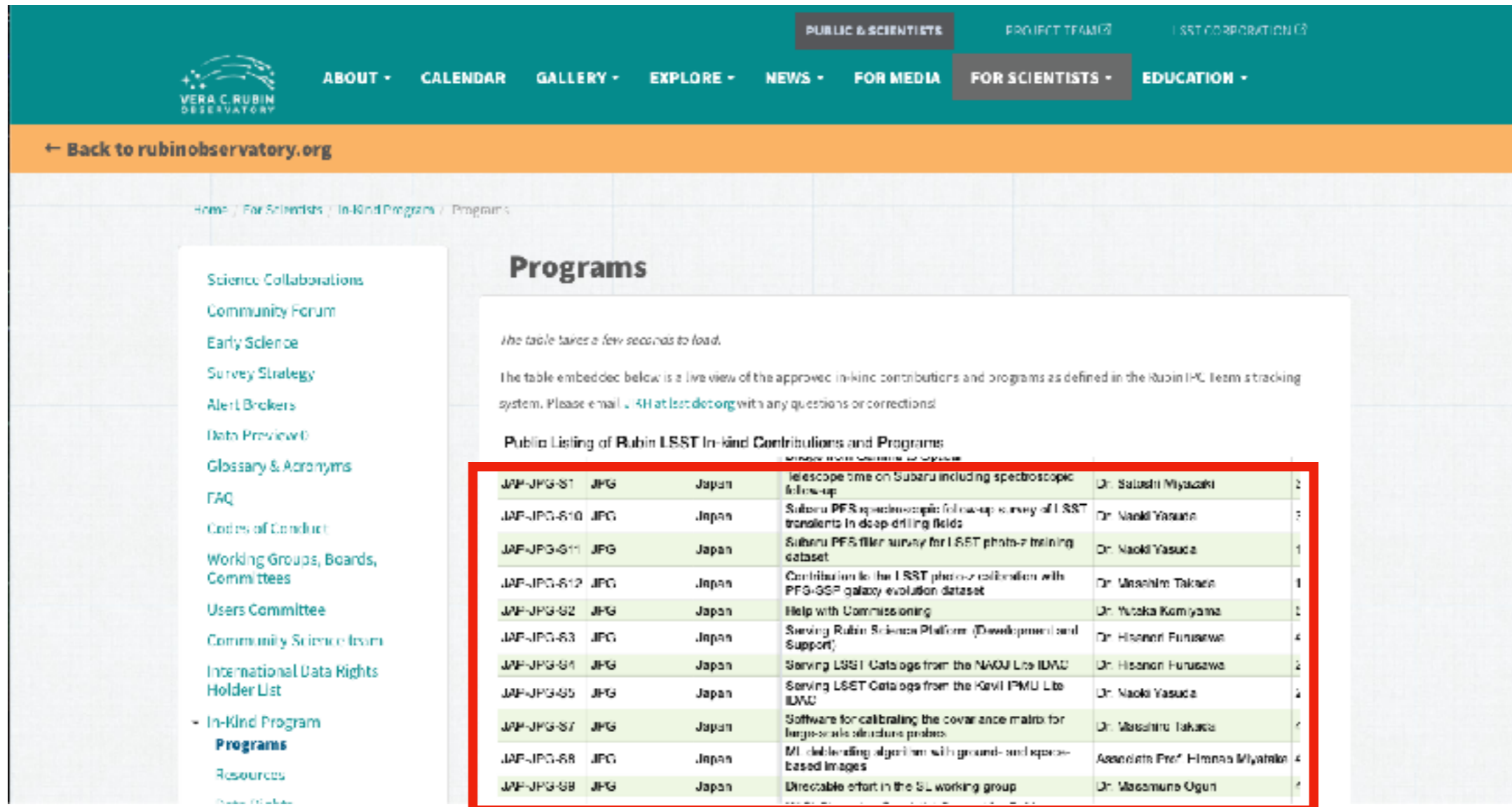


Data rights



- Raw data: 60PB; Catalog 20PB; Processed image: ~several hundreds PB
- Rubin will provide for DRH (Data Right Holders) access data from pixels to catalogs through the **Rubin Science Platform** on Google Cloud (VO, Jupyter notebook, APIs...)
- Transient alert stream will be made public through **alert brokers**; however alert database will be restricted
- Data will be public after 2 years, however no concrete plan yet, limited service?)

In-kind contribution



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Home / For Scientists / In-kind Programs / Programs

Programs

The table takes a few seconds to load.

The table embedded below is a live view of the approved in-kind contributions and programs as defined in the Rubin IFC team tracking system. Please email J4H@lsstdotorg with any questions or corrections!

Public Listing of Rubin LSST In-kind Contributions and Programs

Program ID	Country	Contribution	Principal Investigator	Slots
JAP-JPG-S1	Japan	Telescope time on Subaru including spectroscopic follow-up	Dr. Satoshi Miyazaki	2
JAP-JPG-S10	Japan	Subaru PFS spectroscopic follow-up survey of LSST transients in deep drilling fields	Dr. Naoki Yasuda	3
JAP-JPG-S11	Japan	Subaru PFS filter survey for LSST photo-z training dataset	Dr. Naoki Yasuda	1
JAP-JPG-S12	Japan	Contribution to the LSST photo-z calibration with PFS-GSP galaxy evolution dataset	Dr. Masahiro Takada	1
JAP-JPG-S2	Japan	Help with Commissioning	Dr. Yutaka Komiyama	1
JAP-JPG-S3	Japan	Serving Rubin Science Platform (Development and Support)	Dr. Hisanori Furusawa	4
JAP-JPG-S4	Japan	Serving LSST Catalogs from the NAOSL Lite ILNO	Dr. Hisanori Furusawa	2
JAP-JPG-S5	Japan	Serving LSST Catalogs from the Kavit IPMU Lite ILNO	Dr. Naoki Yasuda	2
JAP-JPG-S7	Japan	Software for calibrating the covariance matrix for large-scale structure probes	Dr. Masahiro Takada	1
JAP-JPG-S8	Japan	ML debiending algorithm with ground- and space-based images	Associate Prof. Hironao Miyatake	4
JAP-JPG-S8	Japan	Directable effort in the SL working group	Dr. Masamune Ugun	4

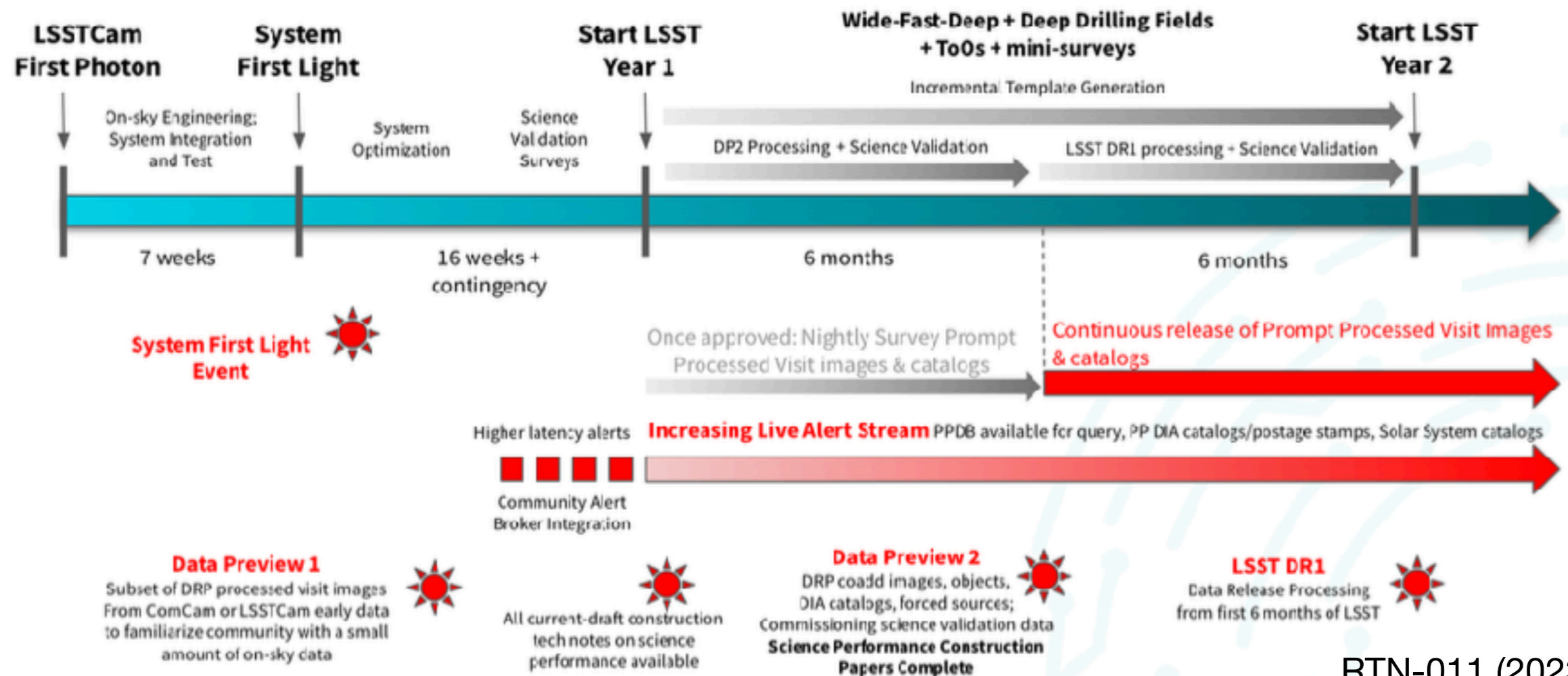
- Japanese community (PL: Satoshi Miyazaki) will receive 37~52 (PIs+4JAs) slots in return for in-kind contribution such as Subaru time and data products, computer resources, and workforces
- The first batch of PIs and JAs who work on In-kind contributions is approved.
- Call for proposal for 20—25PI slots (the second batch) was due on December
 - Selection is underway

Schedule

11 Dec 2024 24 Jan 2025

May 2025?

:Current forecast (<https://www.lsst.org/about/project-status>)



RTN-011 (2023-10-31)

- The second batch of PI/JA under selection will have access to DP0 and will likely to have DP1.
 - Get ready for early science using HSC's heritage!
- Observing strategy is still under discussion.
 - How regular observation will be made?
 - ToO <https://community.lsst.org/t/rubin-too-2024-berkeley-and-online-on-march-18-20-2024/8180>

Summary

- **LSST**
 - 10 years southern sky survey in optical
 - “Well-understood source catalog of stars and galaxies”
- **Construction of Rubin Observatory is underway**
 - Telescope Mount Assembly is in testing
 - Moving, pointing testing with amateur telescope
 - Commissioning Camera (ComCam; 9 CCDs) will be used for initial testing
 - AuxTel (1 CCD) observation to verify software readiness scheduler/analysis is in progress
 - LSST Camera will be leaving SLAC soon
- **Analysis using RSP is underway**
 - Detailed characterization and optimization of the Camera
 - DP0.2 (generic field) and DP0.3 (solar system) are available
- **In-kind contribution (JAP-JPG)**
 - DRH selection of 20—25 PIs is in progress
 - Get ready for early science using DP0.2 and DP0.3