



Vera C. Rubin Observatory



- A next-generation, ground-based facility, providing repeated imaging of faint and time-variable astronomical objects across the entire southern sky every few nights for ten years

NSF (AURA) & DOE (SLAC) partnership, with private, international contributions

→ **DOE's science interests are led by the Dark Energy Science Collaboration**

Construction Project:

NSF responsibilities – observatory, telescope, data management, education/outreach, commissioning

DOE responsibilities:

- **LSST Camera fabrication** was completed Sept. 2021; all key performance parameters demonstrated
- **Commissioning roles** - LSST Camera assembly, test, shipment, integration; effort on the 9-CCD Commissioning Camera (ComCam); data quality and verification studies; also overall Project roles



• Project construction completion forecast ~ Feb. 2025.



Rubin Observatory: Facility Operations Planning



- **The Rubin Observatory will conduct a 10-year deep, wide, fast, optical imaging Legacy Survey of Space and Time (LSST) using DOE's LSST Camera & the Simonyi Survey Telescope**

Facility Operations - DOE/NSF ~50/50 split

Pre-Operations activities have started; Full operations planning continues

- successful Joint DOE/NSF review Feb. 2023

DOE-supported operations efforts (led by SLAC) are primarily:

- Camera maintenance and operations
- US Data Facility at SLAC
 - Has a multi-site processing model; hardware and initial services at SLAC; will have a hybrid model with Rubin Science Platform (user access) in cloud; will carry out the full data facility efforts and deliver data to all researchers and collaborations

Current efforts include:

- Data Preview 0 – using simulated data
- Survey Cadence Optimization
- Satellite constellation impacts
- International in-kind contributions
 - in exchange for early access to data; Data Rights Agreements are in process

DOE/HEP Roles in Integration, Test & Commissioning



At SLAC:

Camera I&T

March 2 - Power was restored to IR-2; continue preparing & testing camera instrumentation; received vacuum-jacketed lines

April – Extensive testing of the filter exchange system

May - Camera cool-down has started

June 6 - Electro-optical tests expected to start; to optimize focal plane performance

July 12 - Complete filter installation and testing

Mid-October – Camera ships to Chile

Camera shipping

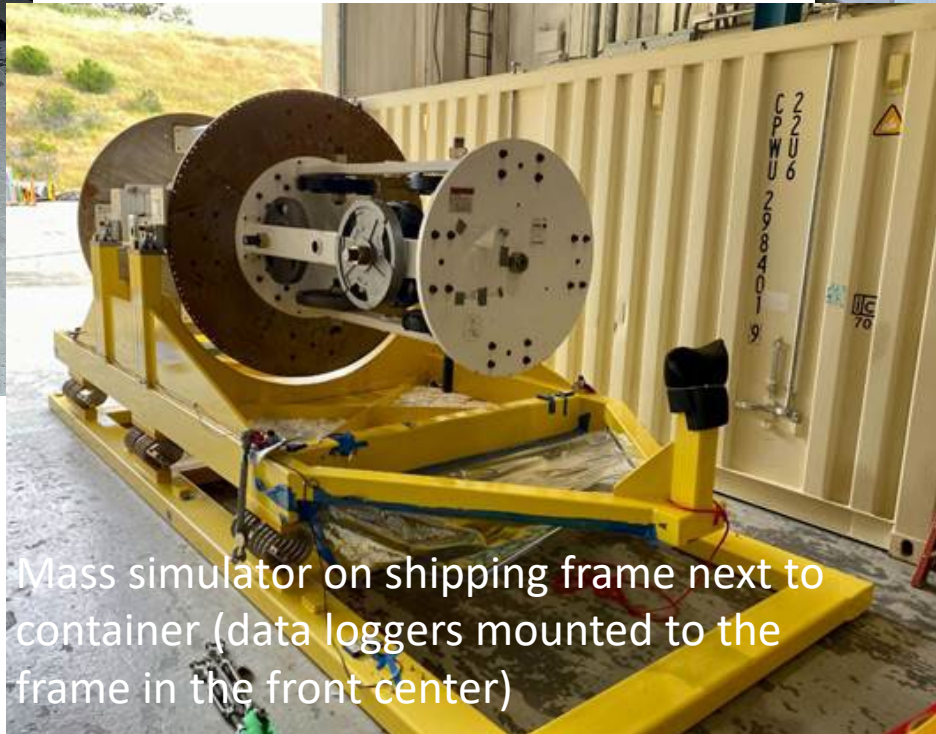
May - mass-simulator test-drive with dummy-load; tested moving camera out of the clean room

Pumped Coolant and Cryo Refrigeration System: Testing continues; Leaks were fixed & pressure has remained stable.

In Chile:

- ComCam mounted on telescope, being used to exercise observatory systems. ComCam took 10,000 bias images this week to study CCD performance. DAQ and CCS performance in ComCam is good, with no issues during this data-taking run.
- Installed the 4 refrigeration cabinets under the telescope floor. Installed all refrigeration hoses at the telescope top end to connect them to the pathfinder hose from the camera cable wrap.

LSST Camera – Shipping Planning



LSST Camera – I&T at SLAC

May 2023 – SLAC clean room



Camera calibration optical bench (CCOB) under the zenith-pointed camera in dark box



Rubin System Integration, Commissioning



Test data is getting sent from Chile to the USDF in SLAC

AuxTel is back in operation; being used for data management and system commissioning. Data is being analyzed at the Rubin Science Platform at the USDF in SLAC

DOE people from labs and universities are stationed in Chile and supporting the overall Project → telescope commissioning, TMA commissioning, overall systems studies, calibrations, data management, including postdocs, students

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