



Overview of Telescope Facilities

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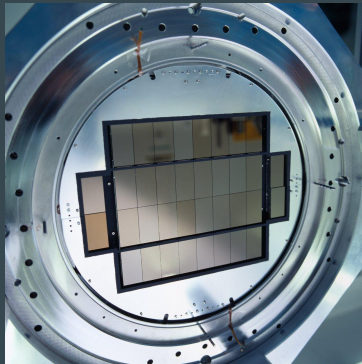
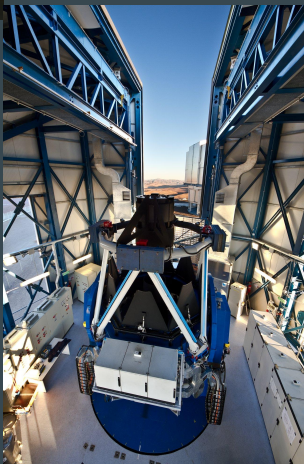
Rubin In-Kind Program
Italian Optical Facility Access
Maria Teresa Botticella INAF

VST

CERRO PARANAL

Key Numbers

Aperture	2.6 m
Wavelength range	350 -1000 nm
Instrument suite	Wide Field Imager OmegaCAM (16k x 16k pixels) 12 different broadband filters 2 narrow band filters designed around the H-alpha emission line
Other relevant facts	Field of view: 1 sq degree Pixel scale 0.21 arcsec/pix Optical design: f/5.5 modified Ritchey-Chretien Reflector with corrector Active optics



Telescope Time Available (to be discussed)

Support of the commissioning operations of the Rubin Telescope.

120 nights in the years 23-25 to provide independent data for cross-calibration of the first Rubin images.

Follow-up observations

35 nights/year made available to the US and Chilean communities for follow-up observation of LSST targets or other scientific investigations.

Support of the LSST survey during operations

65 nights/year used to execute surveys that may be complementary to LSST science in terms of temporal baseline and coverage as well as photometric depth and completeness.

We are currently envisaging three surveys:

- 1) a precursor monitoring survey on the DDFs (or other specific fields proposed by the SCs) to extend the duration of LSST AGN light curves, thus improving the detection and characterisation of transient/variable sources and providing template images at the beginning of LSST operations;
- 2) a high-cadence (daily) monitoring campaign of ~ 30 galaxies and ~ 10 cluster lenses in 10 years. The data will allow us to measure light curves and time delays to $\lesssim 2\%$ and to build high-quality weak lensing mass maps;
- 3) a co-survey within the LSST footprint to fill temporal and/or filter gaps providing ancillary data to maximize the effectiveness of the main survey.

Observation Scheduling (to be discussed)

2023: 50 nights for the Rubin commissioning

2024: 50 nights for the Rubin commissioning +15 nights for follow up

2025: 20 nights for the Rubin commissioning +15 nights for follow up

2026-2036: 65 nights per year for survey +35 nights for follow up

Accessing data products (to be discussed)

The data reduction will be performed at the VST Data Center based at INAF that has been reducing, storing and distributing VST data since the beginning of operations.

We aim at releasing to the LSST US and Chilean community :

- the co-added and calibrated VST images for selected sky fields
- the catalogues and light curves for all transients discovered in these fields.

Our contributed dataset will be accessible to all LSST members in a timely manner by the start of Rubin operations.

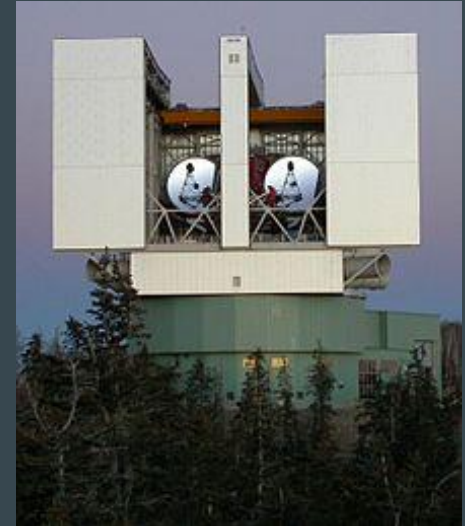
Other Italian facilities for follow up (to be discussed)

LBT Mt. Graham (Arizona)

The Large Binocular Telescope is a 2x8.4 meter telescope designed to deliver AO-corrected observations equipped with three instruments:

the imaging camera LBC a 23'x23' prime focus camera with a blue-enhanced and a Red channel,
the optical-IR spectrograph MODS covering the entire wavelength range 3200-10000Å,
the a zJHK near-IR spectrograph LUCI

INAF will offer 2 nights/year for Rubin commissioning
+ 20 hours/year for Follow up (spectroscopy and imaging)



Other Italian facilities for follow up (to be discussed)

SOXS La Silla

Son of X-Shooter (SOXS) is a medium resolution ($R \sim 4,500$), wide-band (350-2000 nm) spectrograph to be mounted at the 3.6m NTT/ESO in La Silla.

INAF will deliver 2,000 spectra obtained with SOXS from LSST targets.

Observations and data reduction will be executed within the Guaranteed Time Observations secured by the SOXS consortium

The targets will be observed over 5 years, at a rate of approximately 400 per year.

Deliverables are the entire data acquired for the targets, including 1-D extracted spectra and spectral classification.

