

Laboratori di "piano Focale" per sistemi ground based e spazio

INAF - Osservatorio Astrofisico di Arcetri

Andrea Tozzi (tecnologo)

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Team:

Anna Brucalassi (TD, astronomer)

Marcella Iuzzolino (TD, aerospace eng.)

Jose Antonio Araiza (PostDoc, optical designer)

Daniele Gottimi (borsista, FEM analysis)

Gilberto Falcini (staff, mechanical shop)

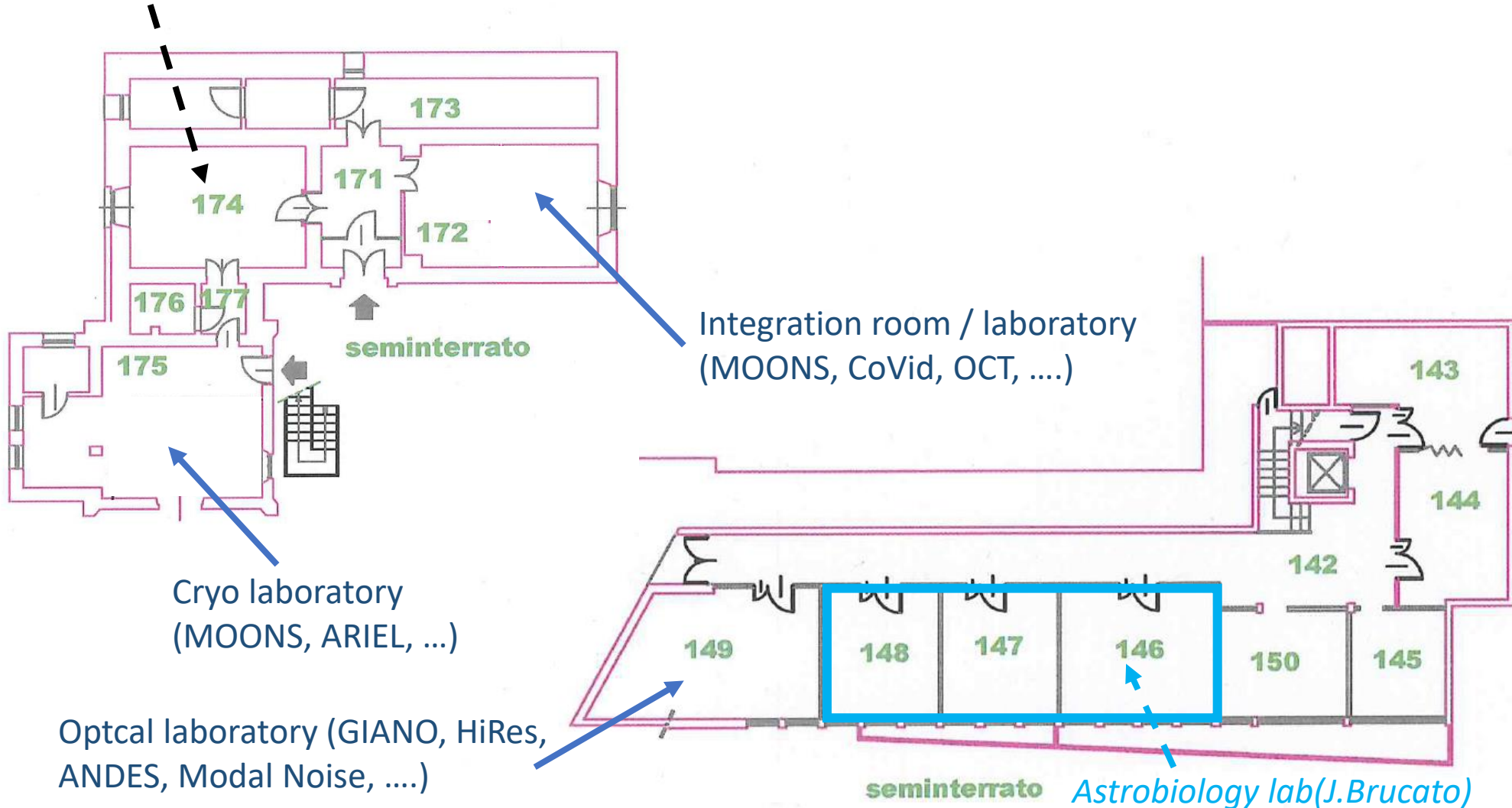
Luca Carbonaro (staff, 3D designer)

Ciro Del Vecchio (staff, FEM analysis)

Ernesto Oliva (staff, astronomer)

Location: Tirgo building

Clean Room (LBT/Adoni)



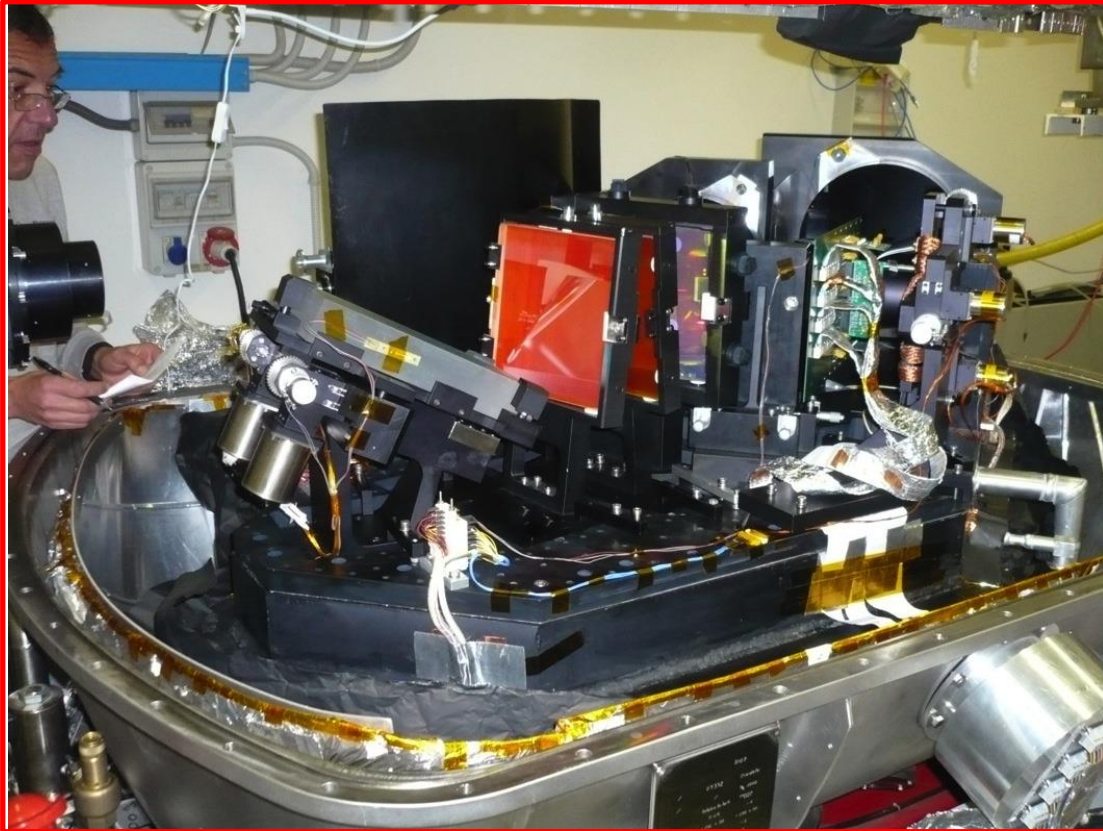
Optical laboratory



Ex Infrared Laboratory
now
Focal Plane Lab

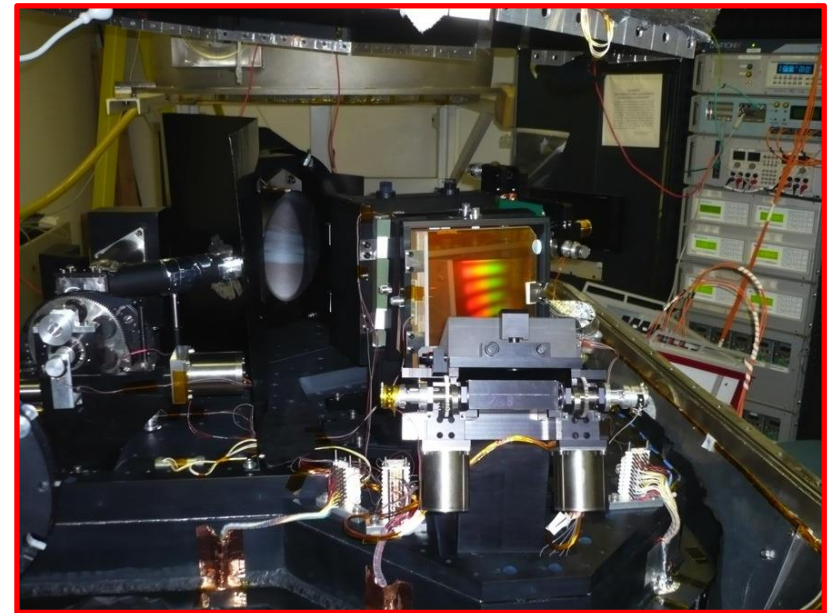
Modal noise study
(ANDES, 2021
MoMitEF, 2022)

Optical laboratory



Last instrument completely assembled and tested in Arcetri!

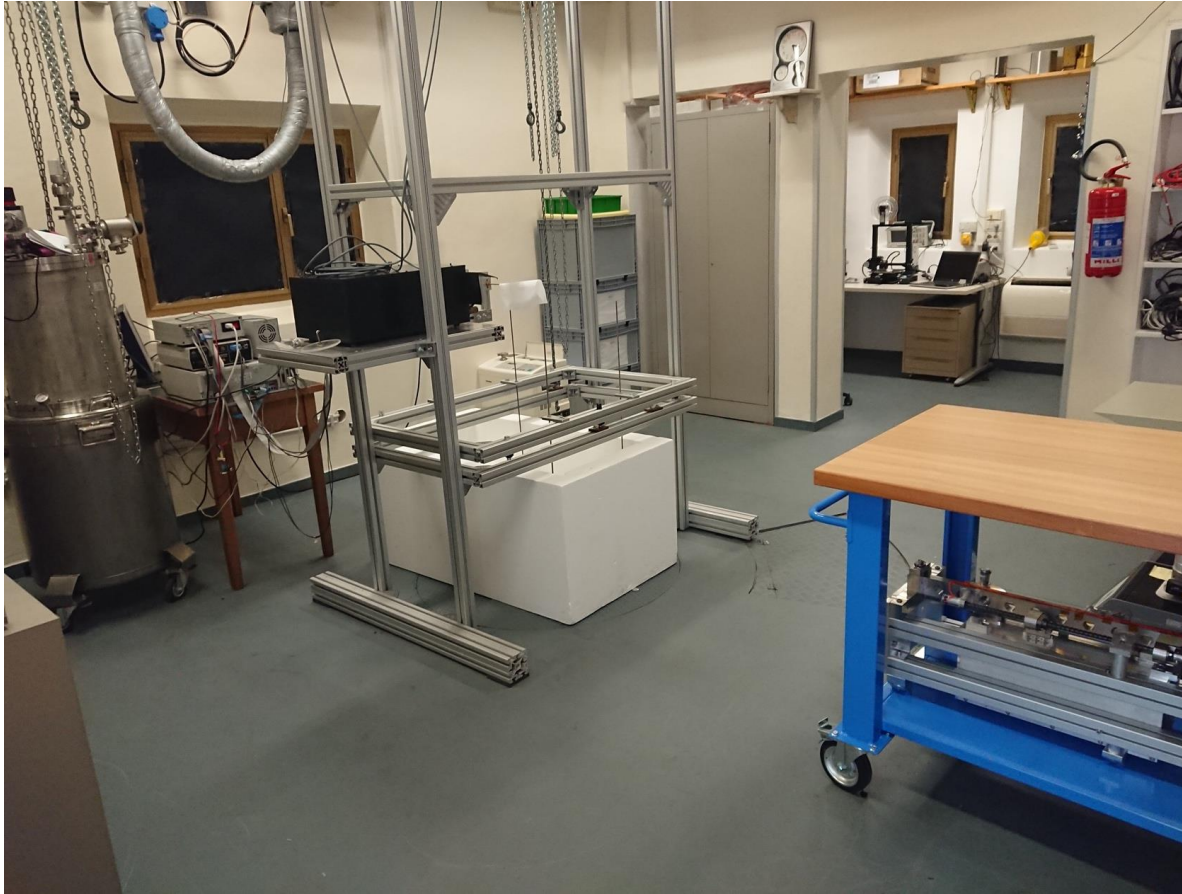
GIANO-TNG Arcetri integration (2012)



A: Tozzi, E.Oliva (Arcetri), foto: Laboratori di Arcetri 2012

Infrared High Resolution spectrograph (50000) over the 0.95-2.4 micron spectral range

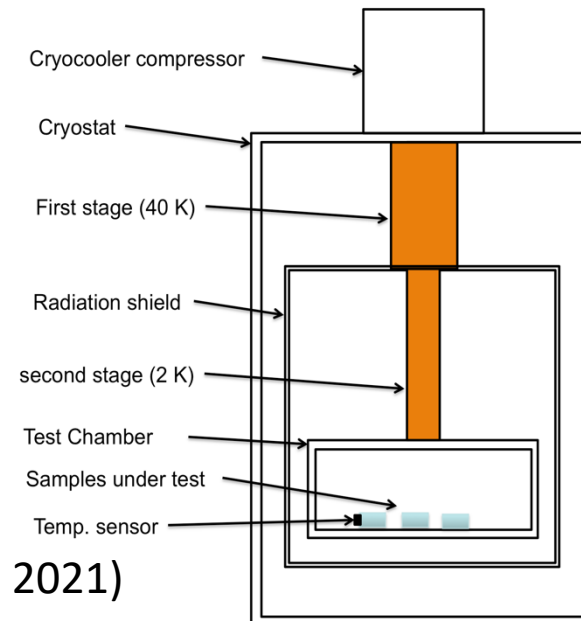
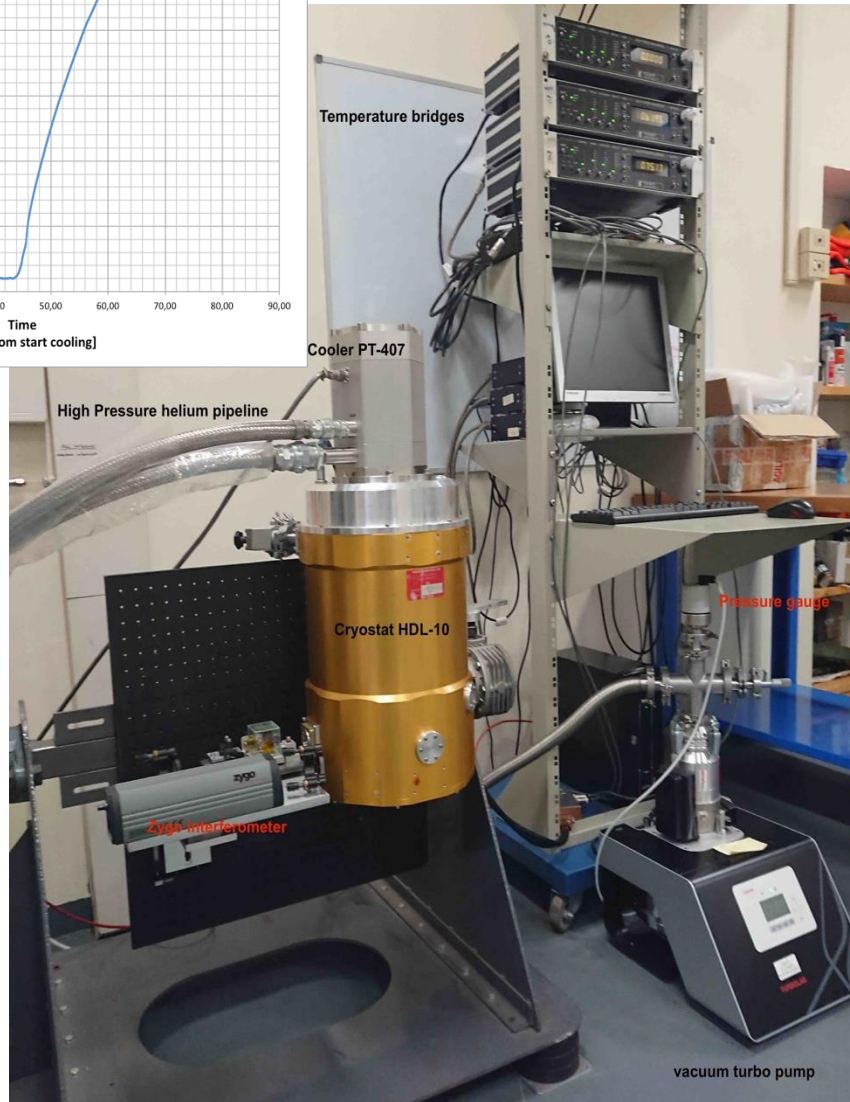
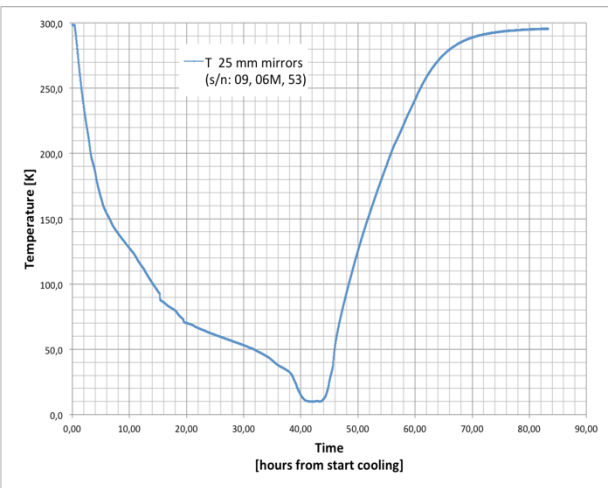
Cryo Lab



- Fizeaux interferometer
- Beam expander up to 400 mm
- Liquid Nitrogen cryostat (L= 1100, diam=380 mm)
- Cryostat with cryocoolers (L=400, diam = 250 mm, up to 10K)
 - with Zygo interferometer
- Various cryostats and Helium cryocoolers
- open-air cryogenic cooling system for the interferometer (D = 400 mm)
- Leybold Turbovac (10E-7 bar)
- Two Helium Leak detectors
- Cernox, PT100, pressure sensors,

Cryo Lab

The cryogenic facility used to test the mirror samples is based on a commercial Cryostat (model HDL-10 of Infralab Laboratories Inc) cooled by a Cryocoolers model PT407 of Cryomech. The vacuum is realized by a Leybold turbo pump. The temperature is read using some calibrated CERNOX temperature sensors.



Test for ARIEL (120 mm diameter Aluminum mirror @ 30K, 2021)

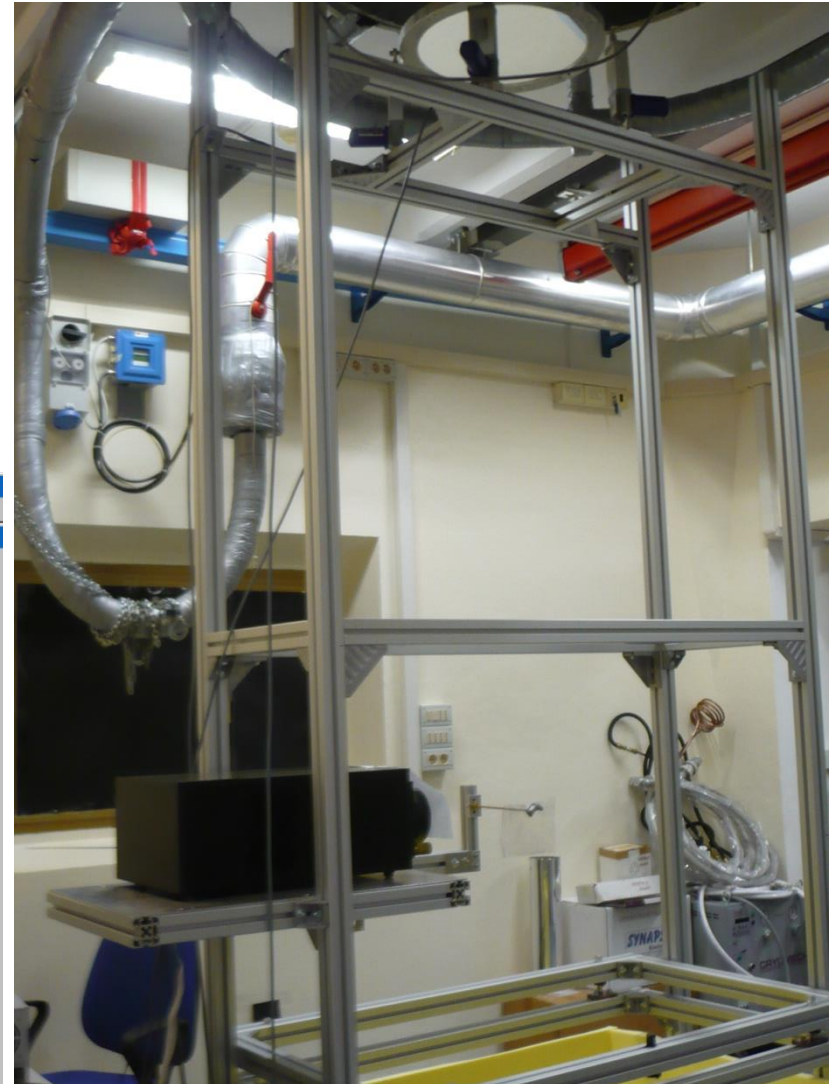
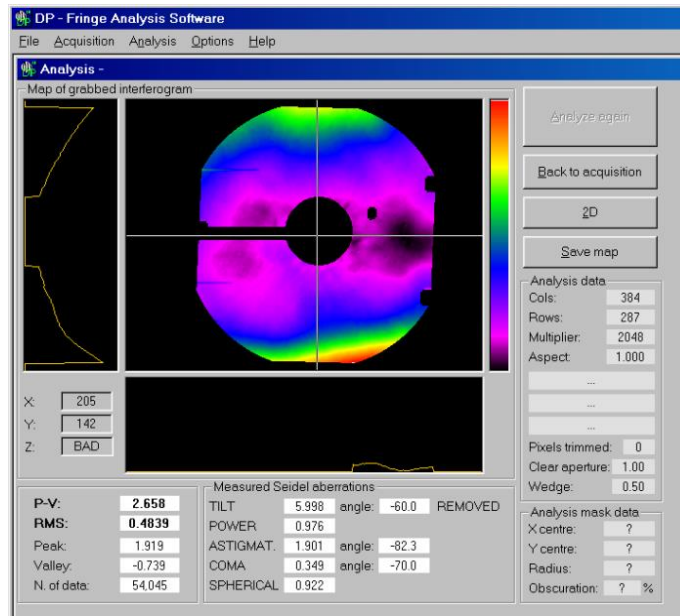


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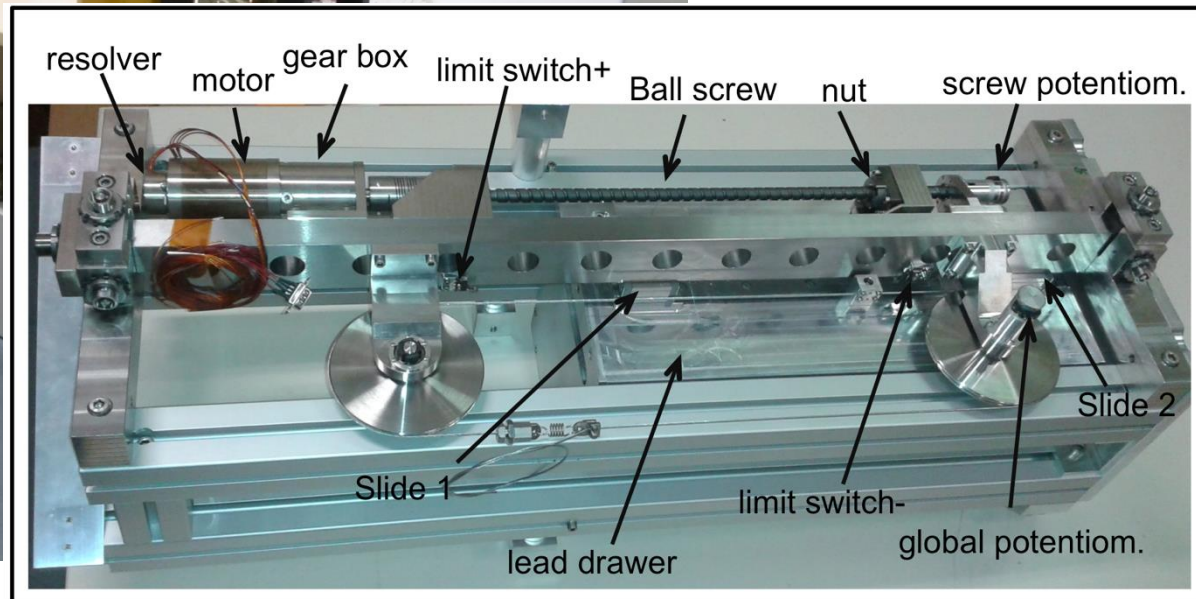
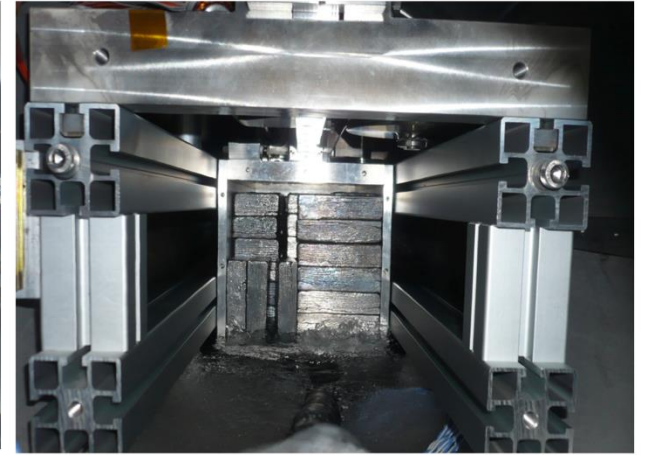
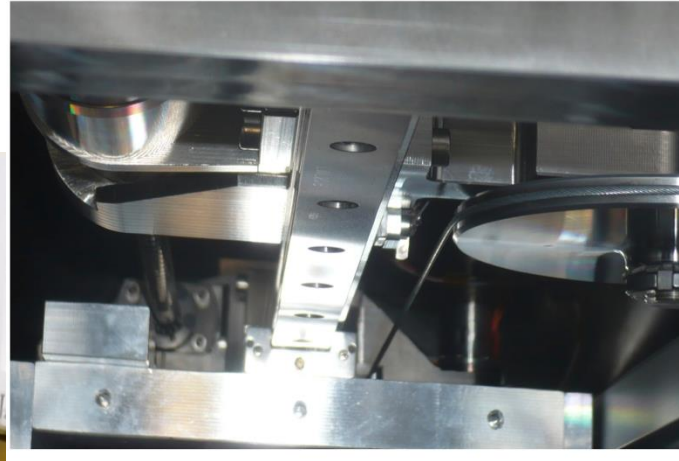
Interferometric measurements were performed using an open-air cryogenic interferometer (OACI) developed in-house. This system includes an interferometer with a beam-expander producing a $D=400$ mm collimated beam and a tub that can be filled with liquid nitrogen (LN2) to cool the specimen under inspection.

Cryogenic test of glue and f/0.9 camera for MOONS (2019)



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Cryo Lab



Prototype of the Exchange mechanism for MOONS-ESO @77K (250 kg, 350 mm travel range, 2019)

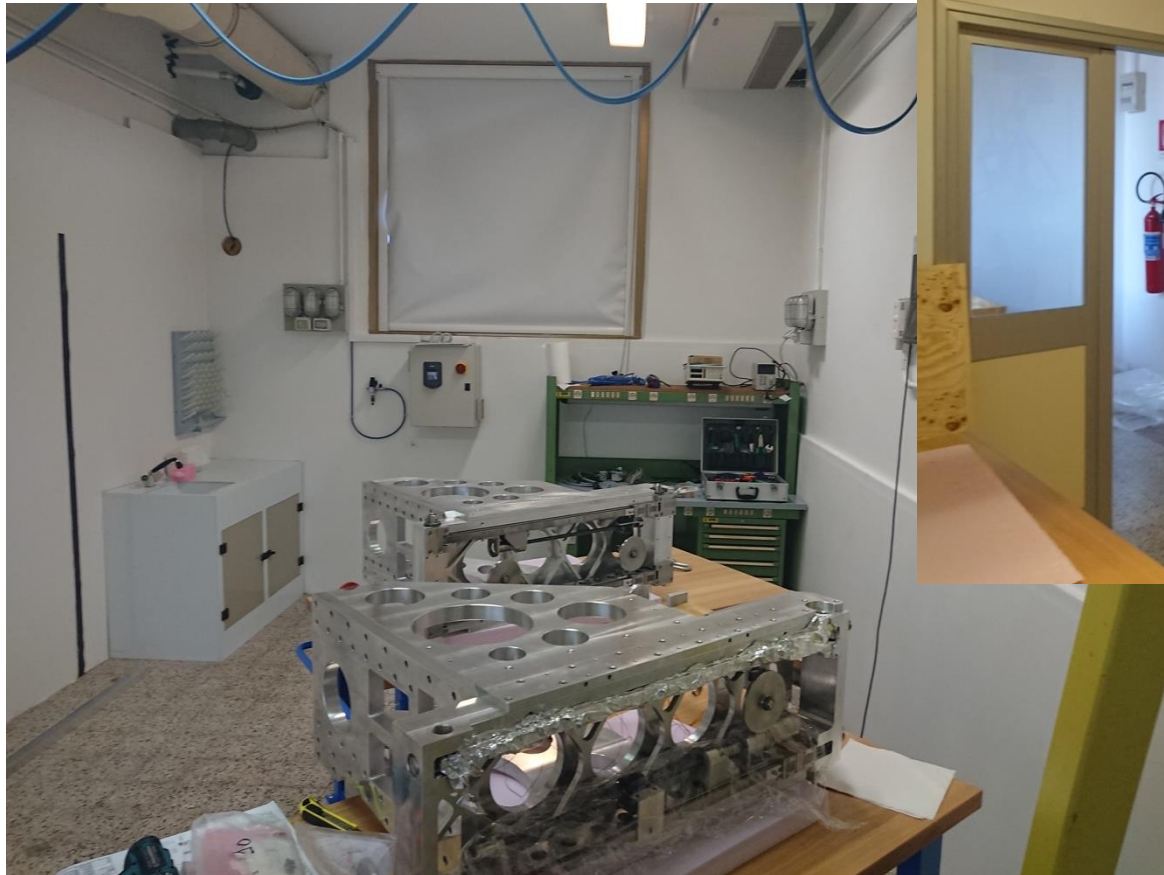
Integration room / laboratory



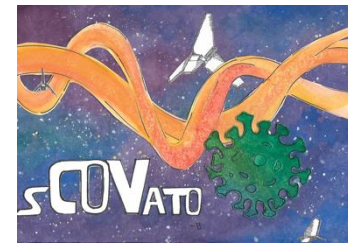
Integration room / laboratory



MONNS: test of the two cryogenic exchange mechanisms. March 2020



Integration room / laboratory



sCOVato laboratory
(November 2020)

Analysis for SARS-COV-2
virus: rapid test using VLP
(Virus Like Particles) with
ISS → patent pending

