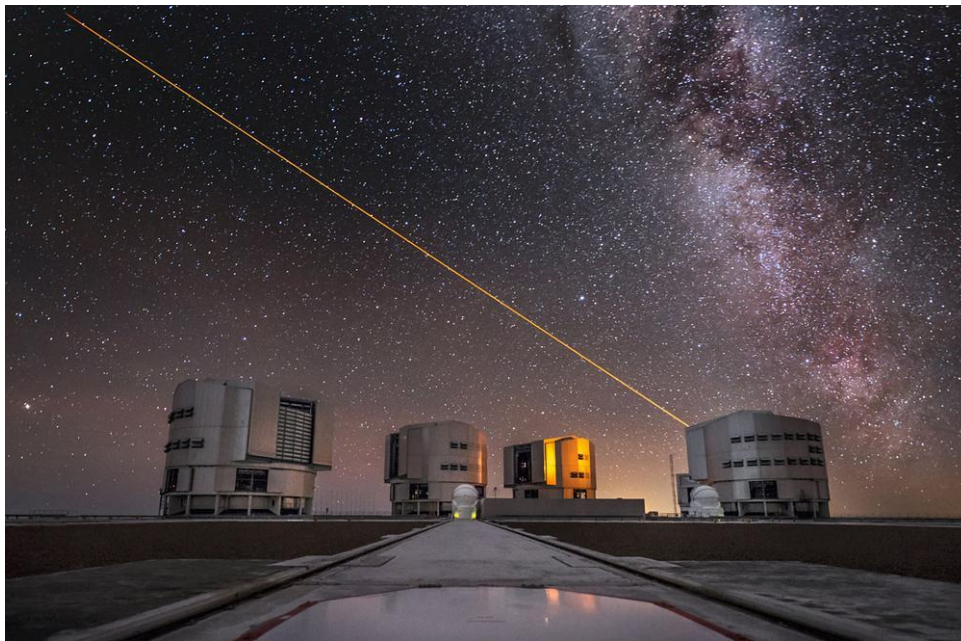


INAF involvement in VLT: the status



Marcella Marconi (INAF-Osservatorio Astronomico di Capodimonte)
INAF USC-A Coordinator

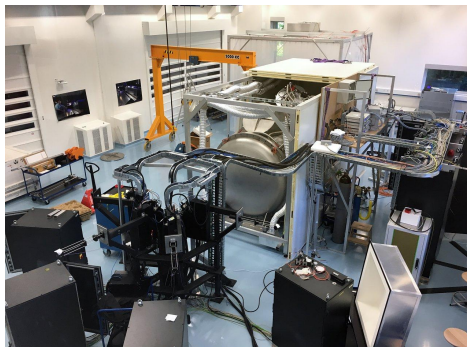
with **Stefano Covino, Stefano Cristiani, Simone Esposito, Ernesto Oliva, Valentina Viotto**

INAF involvement in VLT: the status

ERIS@UT4



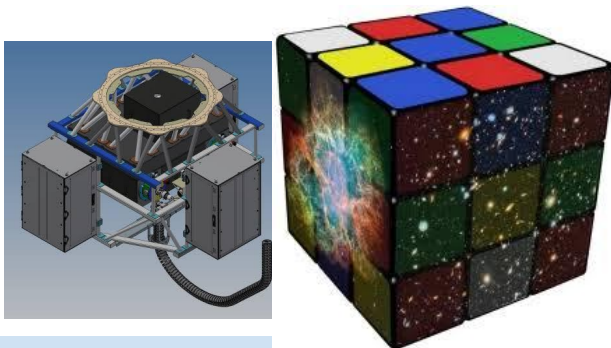
ESPRESSO



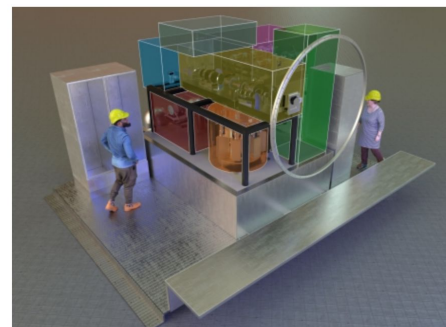
MOONS@UT1



CUBES



MAVIS

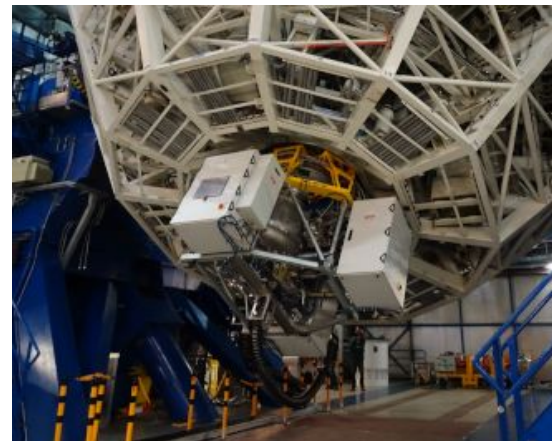


ERIS (Enhanced Resolution Imager and Spectrograph) is an instrument for the VLT designed to enable diffraction-limited observations in both spectroscopic and imaging modes at near-infrared wavelengths.

It consists of an IR camera (NIX) and the SPIFFIER spectrograph.

The adaptive optics subsystem was developed by INAF: the adaptive optics module at the Arcetri Astrophysical Observatory and the Calibration Unit at the Teramo Astronomical Observatory.

In addition, INAF also contributed to the project through the Padua Astronomical Observatory for the development of the Instrument Control Software



INAF ERIS coordinator:
Simone Esposito

ERIS has been available to the scientific community since April 2023, which also coincides with the start date of INAF's GTO exploitation.

INAF has 60,15 nights of GTO for ERIS, expiring in April 2028

INAF involvement in ERIS

For the **design, integration, and commissioning** of the instrument only, starting from the beginning of the Preliminary Design Phase (2014) **about 40 FTE**

For the **scientific exploitation of GTO** about **100 colleagues** within INAF

Planet formation

Exoplanet system architecture

Protoplanetary disks

galactic evolution

High redshift Universe

INAF contribution to ERS

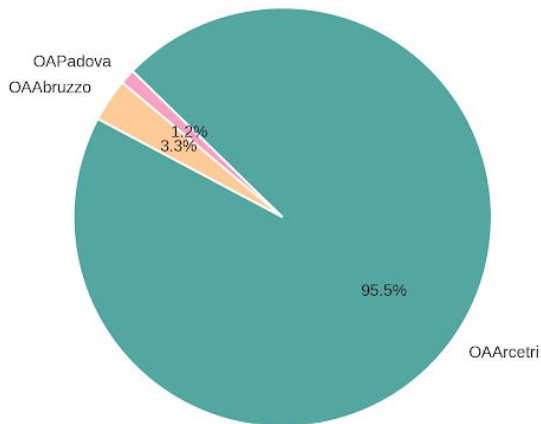
From 2014 to 2025: about 2 Meuro, including 839 keuro received from ESO for the instrument hardware.

Current and future INAF involvement in ERS

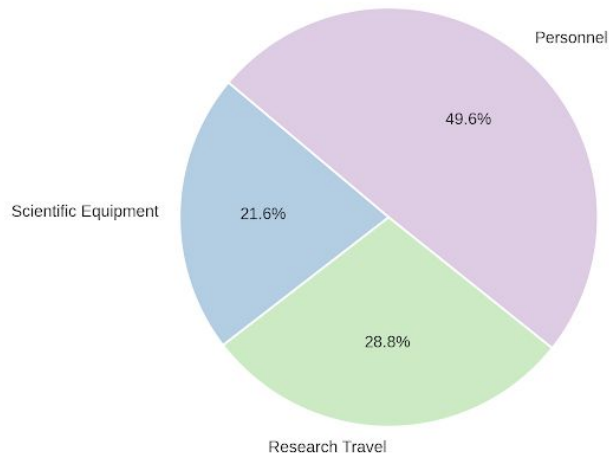
from 2026

ERS Project Budget Analysis (€206,386 Total)

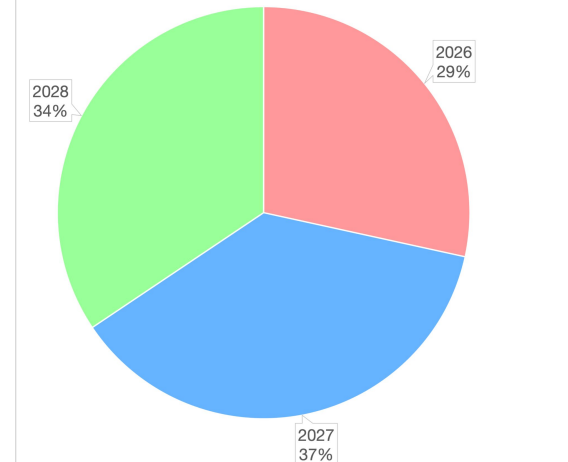
Breakdown by INAF Institute



Breakdown by Expense Category



Breakdown by Year (2026-2028)



ESPRESSO (Echelle SPectrograph for Rocky Exoplanet and Stable Spectroscopic Observations), located at the ESO VLT, is a cornerstone of exoplanetary research for **INAF** that is a primary co-developer of the instrument through its **Brera and Trieste Astronomical Observatories**.

ESPRESSO's ultra-precise radial velocity capabilities allowed important scientific achievements.

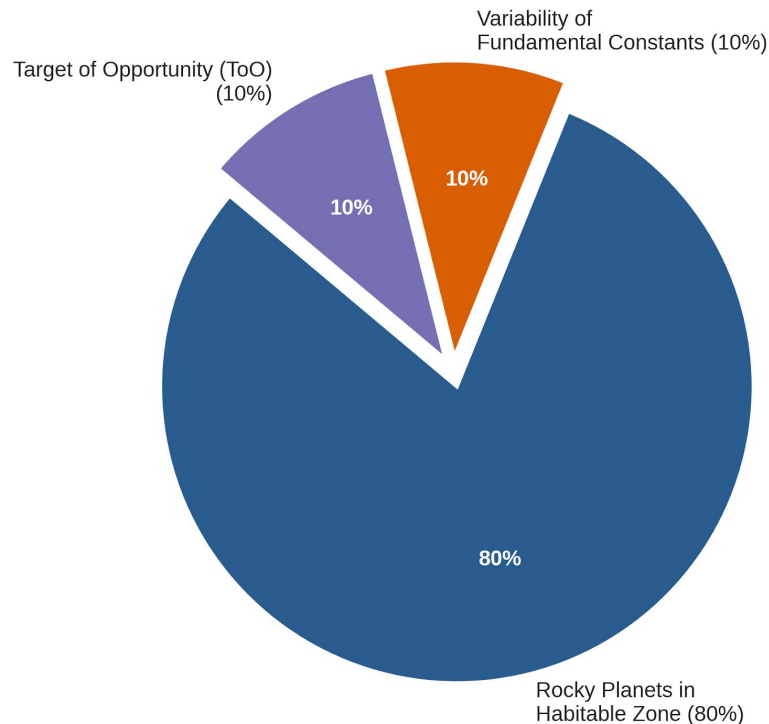
INAF ESPRESSO Coordinator: Stefano Cristiani

ESPRESSO GTO for INAF

The ESPRESSO GTO program for INAF focuses on three pillars:

- 80% Search and characterization of rocky planets in the habitable zone
- 10% Variability of fundamental constants
- 10% Target of Opportunity (ToO), to be dedicated to any, but very topical domain of astrophysics.

INAF ESPRESSO GTO Program Allocation



INAF involvement in ESPRESSO

About **20 INAF colleagues** have been involved in the technical development of ESPRESSO, with **40.3 FTE** provided.

The scientific exploitation of INAF GTO involved **11 INAF staff, 2 post docs, 3 Ph.D. students and 1 Australian researcher.**

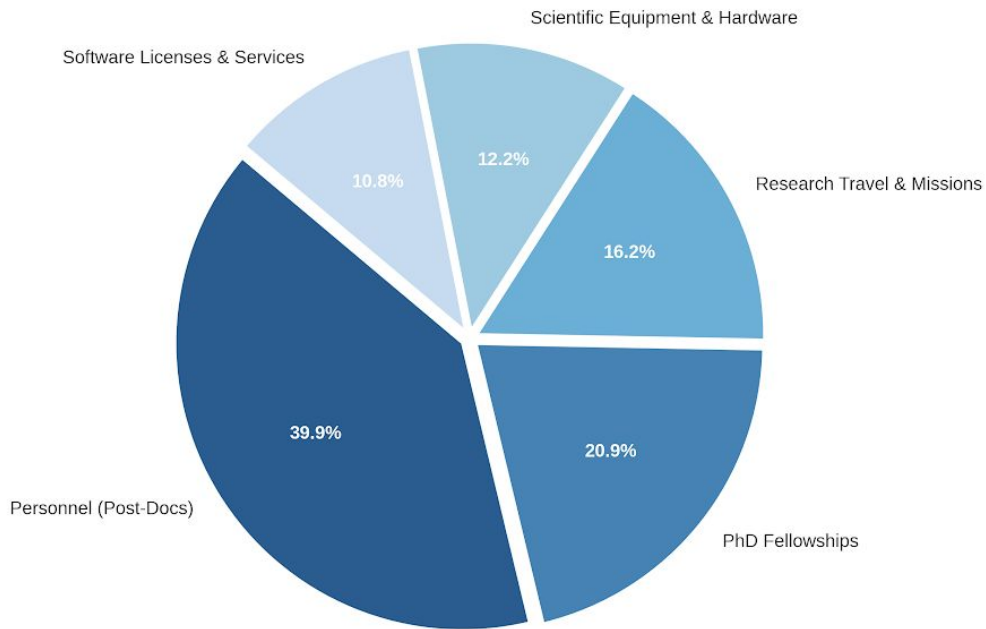
INAF has contributed as per MoU with **2.2 MEU** capital investment.

Current and future INAF funding for ESPRESSO

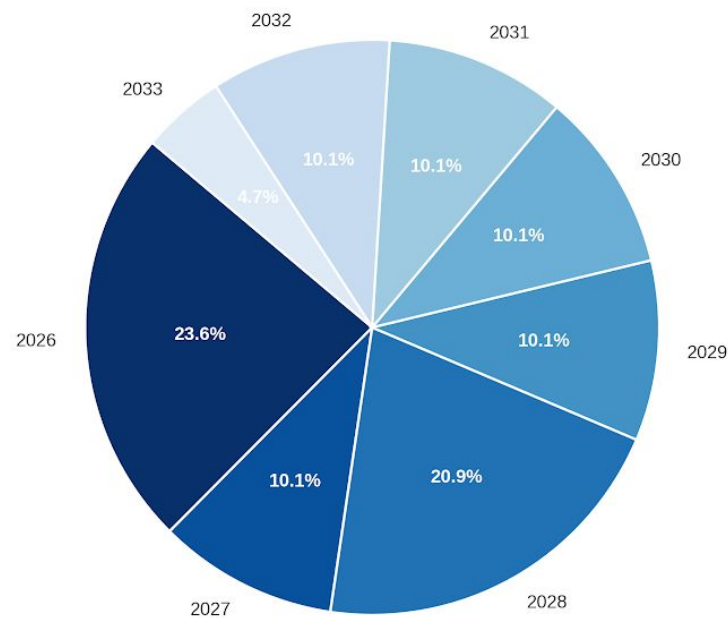
from 2026

ESPRESSO Project Budget Analysis (€740,000 Total Allocation)

Budget Breakdown by Topic / Expense Category



Budget Breakdown by Year (2026–2033)



ESO's newest scientific instrument, the Multi-Object Optical and Near-infrared Spectrograph (MOONS) has successfully made its first observations (first light) on August 14 2026.



Fast and very accurate fibre positioning system to feed light into two identical cryogenic **spectrographs** (with 500 fibres each)

→ **optical and near-infrared spectra for about 1000 objects at once !**

INAF MOONS Coordinator: Ernesto Oliva

The consortium that designed and built MOONS was awarded a total of **300 nights of GTO** in exchange for delivering the instrument. Instead of receiving a specific number of nights, **INAF's "share" (16.8%) is represented by guaranteed manpower and leadership roles inside two collective surveys.**

MOONRISE (Extragalactic GTO Survey): 200 nights are dedicated to studying galaxy evolution and cosmology.

Galactic Archaeology GTO Survey: 100 nights are reserved for mapping the Milky Way. This survey takes advantage of MOONS' near-infrared capabilities to peer through cosmic dust and study stellar populations in highly obscured regions.

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INAF and associated personnel are (co-)responsible for 11 out of the 21 scientific WPs dedicated to the GTO.

INAF involvement in MOONS

20 INAF colleagues have been involved in the technical development of **MOONS**, with **32.1 FTE** provided.

The scientific activity involved 38 INAF staff, 3 post docs

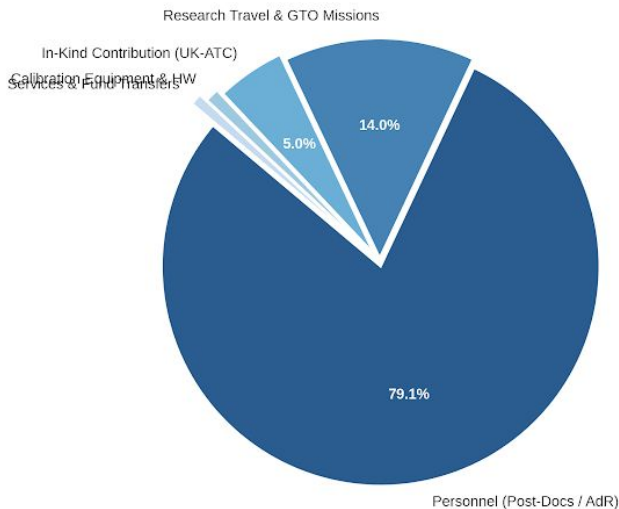
INAF has contributed as per MoU with **990 Keuro** as in-kind contribution

Current and future INAF funding for MOONS

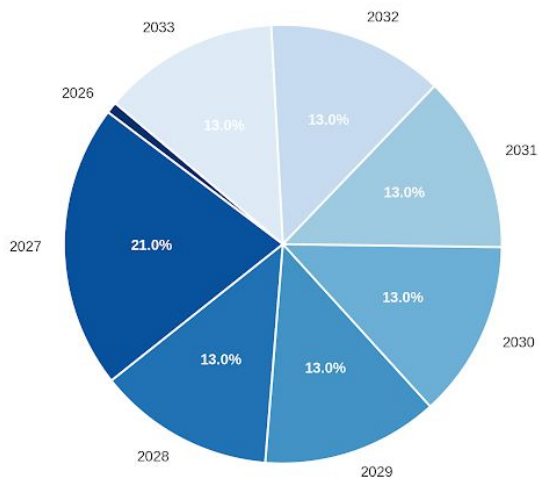
from 2026

MOONS Project Budget Analysis (€2,992,000 Total Allocation)

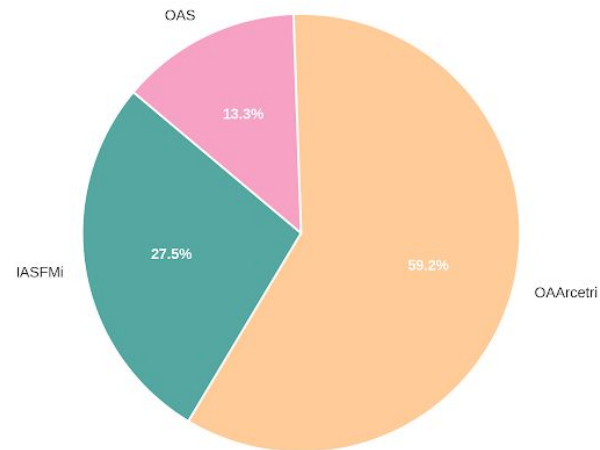
Breakdown by Topic / Expense Category



Breakdown by Year (2026–2033)



Breakdown by INAF Institute



CUBES (*Cassegrain U-Band Efficient Spectrograph*), is the forthcoming ESO VLT spectrograph to be installed at one Cassegrain focus of the VLT with the goal of covering with a high efficiency the UV ground-based region (300 - 400 nm) with intermediate resolution (about 20K).

CUBES is now passing through the **phase D (MAIT)**.

INAF PI-ship **Stefano Covino (INAF Brera)**

see Stefano's talk

CUBES INAF GTO

Total Consortium Pool: 90 nights (consisting of 70 nights for core instrument development plus 20 nights compensating for extra consortium contributions).

INAF's Lead Share: Because INAF leads the consortium and contributes the majority of project management and optical design resources, INAF holds the largest individual share of the GTO time.

Execution Strategy: The 90 nights will be executed over a 3 to 5-year period starting after **first light** (planned for the **end of 2030**). The time will be split between INAF-led flagship projects and joint consortium legacy surveys

INAF involvement in CUBES

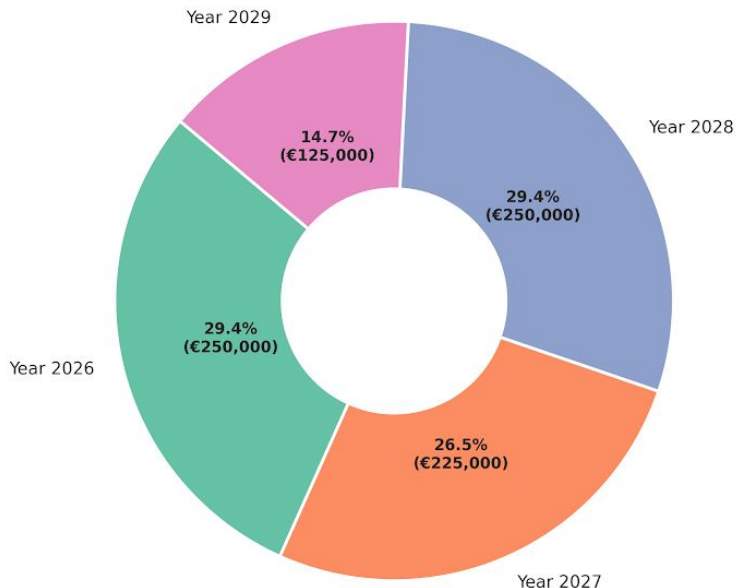
About 40 INAF personnel (astronomers, technical leads, software engineers, and postdocs) are registered as participants in the overall CUBES project.

Initially planned INAF contribution: 600 keuro

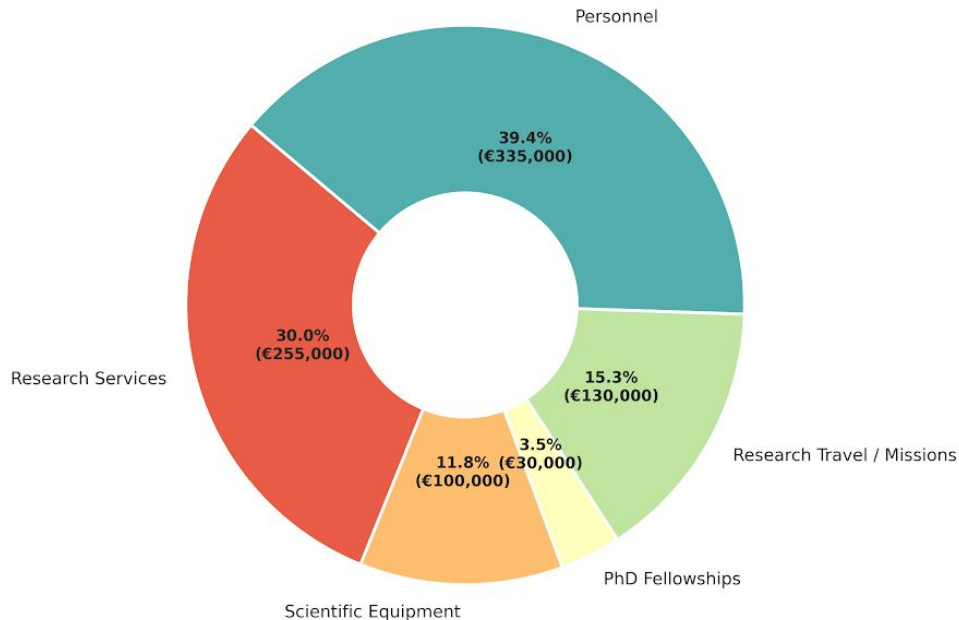
Current and future INAF funding for CUBES

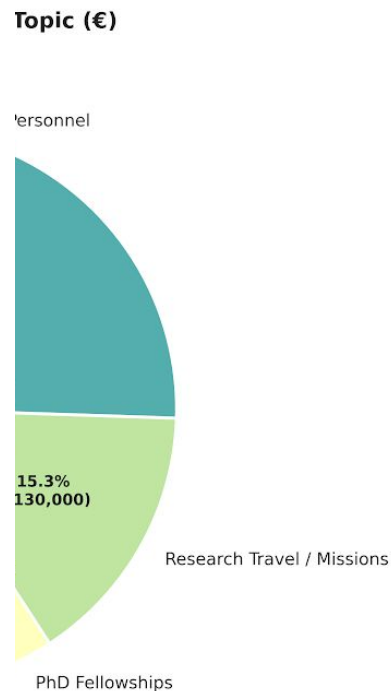
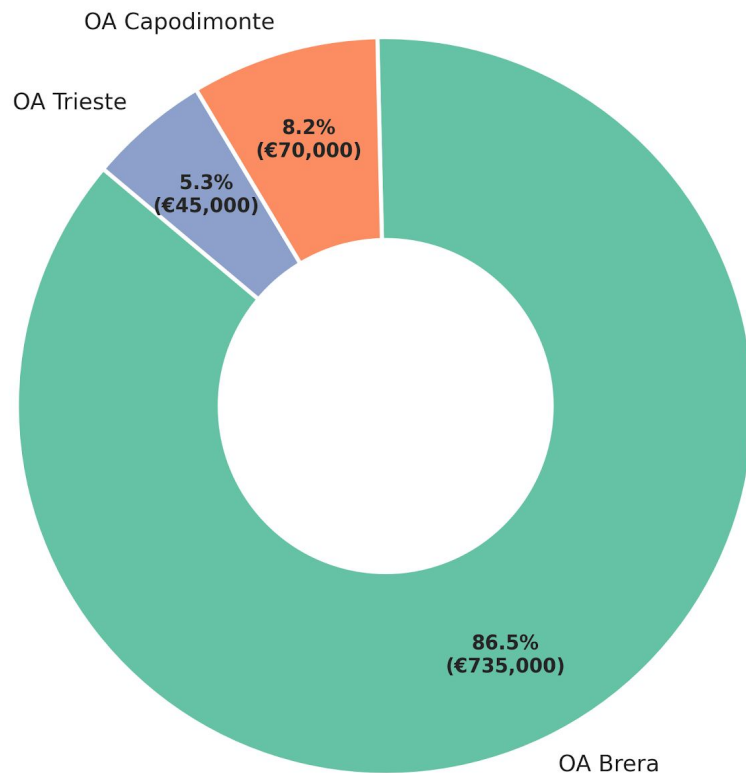
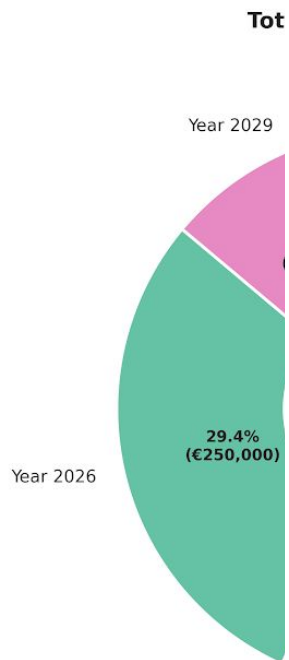
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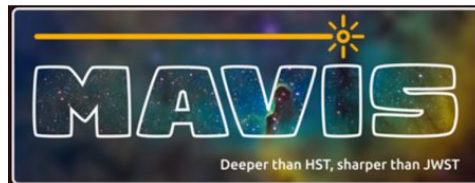
Total Budget by Year (€)



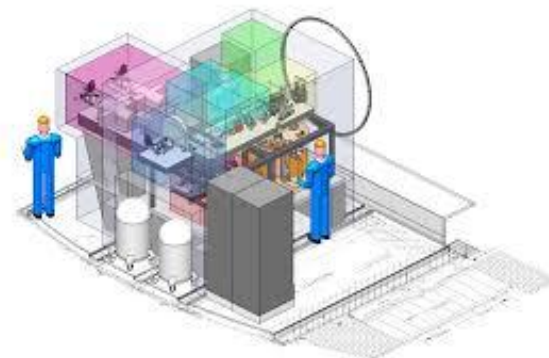
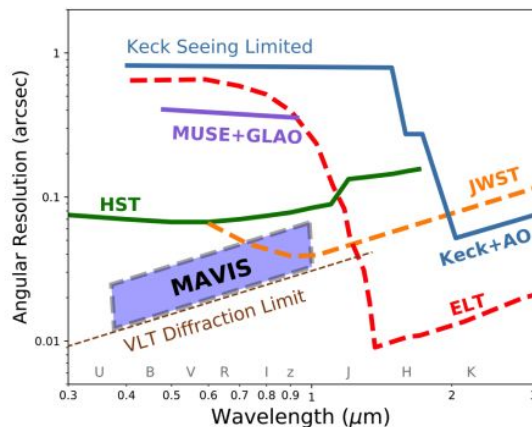
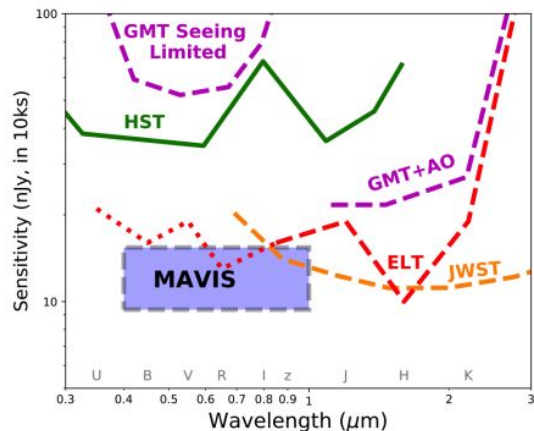
Total Budget by Category / Topic (€)







MCAO-Assisted Visible Imager and Spectrograph



see Giovanni's talk

INAF Coordinator: Valentina Viotto

MAVIS with an angular resolution of down to 18 milliarcseconds and a powerful and sensitive post-focal instrumentation, will answer astrophysical science questions:

- **stellar evolution and star formation;**
- **physical composition of mid-redshift galaxies;**
- **how early galaxies assemble;**
- **weather monitoring on our solar system planets and moons.**

150 GTO nights awarded to the consortium (~50/50 FTE Italy and Australia) + 44 extra nights for spectrograph hardware to Astralis.

GTO, Collaboration and Publication Policy under discussion:

Shared programs among the consortium to maximise GTO scientific return
Plships weighted based on GTO share of each partner

INAF involvement in MAVIS

In the consortium about 30 staff researchers/technologists and about 10 temporary researchers/technologists

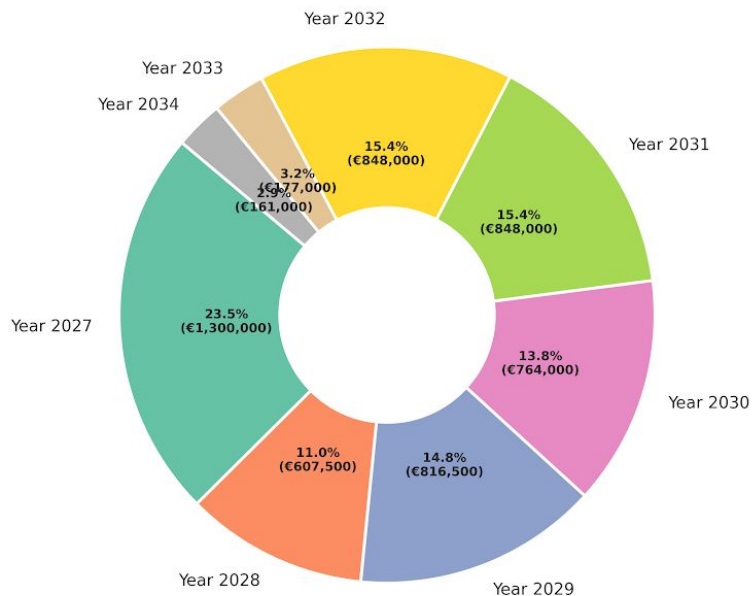
About additional 40 staff colleagues are interested in MAVIS science.

Estimated total contribution from INAF: about 7 Meuro

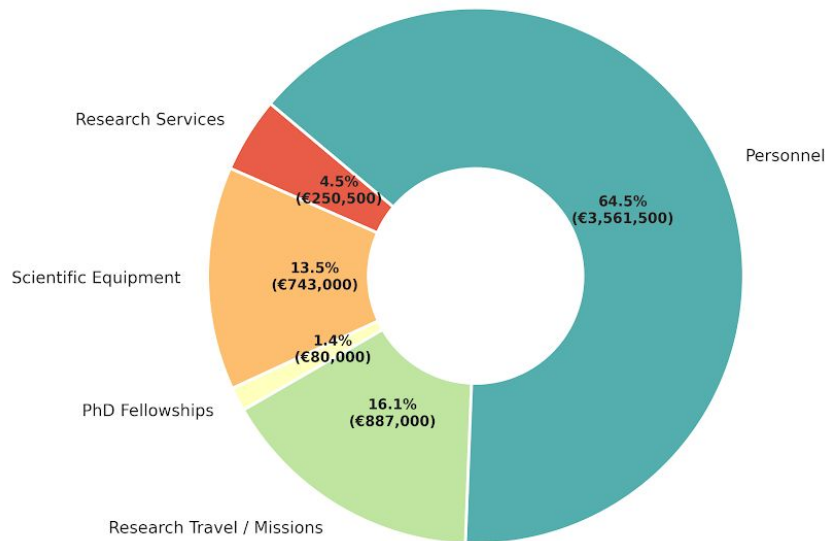
Current and future INAF funding for MAVIS

from 2027

MAVIS: Total Budget by Year (€)



MAVIS: Total Budget by Category / Topic (€)



MAVIS Budget Breakdown by Institute / Observatory (€5,522,000 Total)



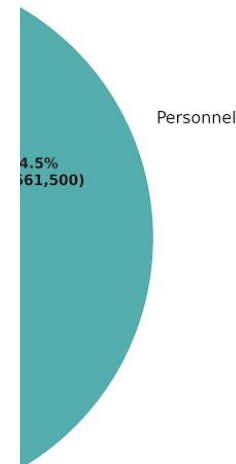
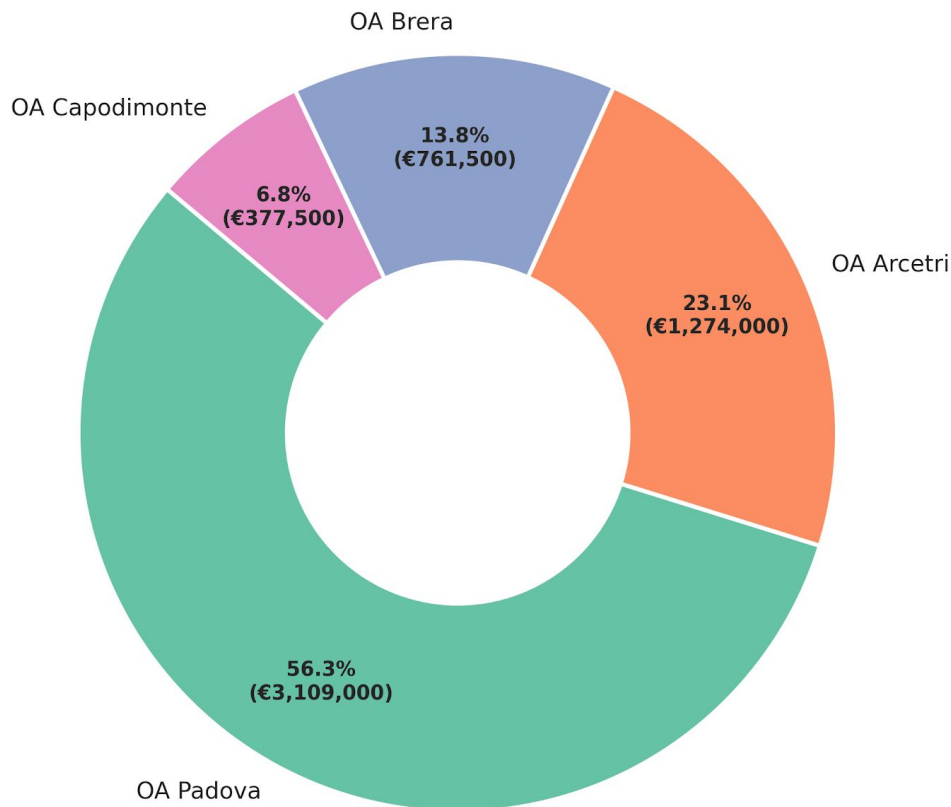
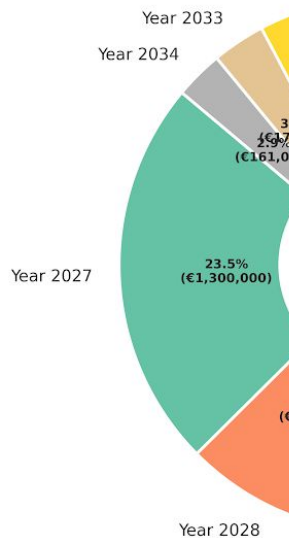
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AVIS

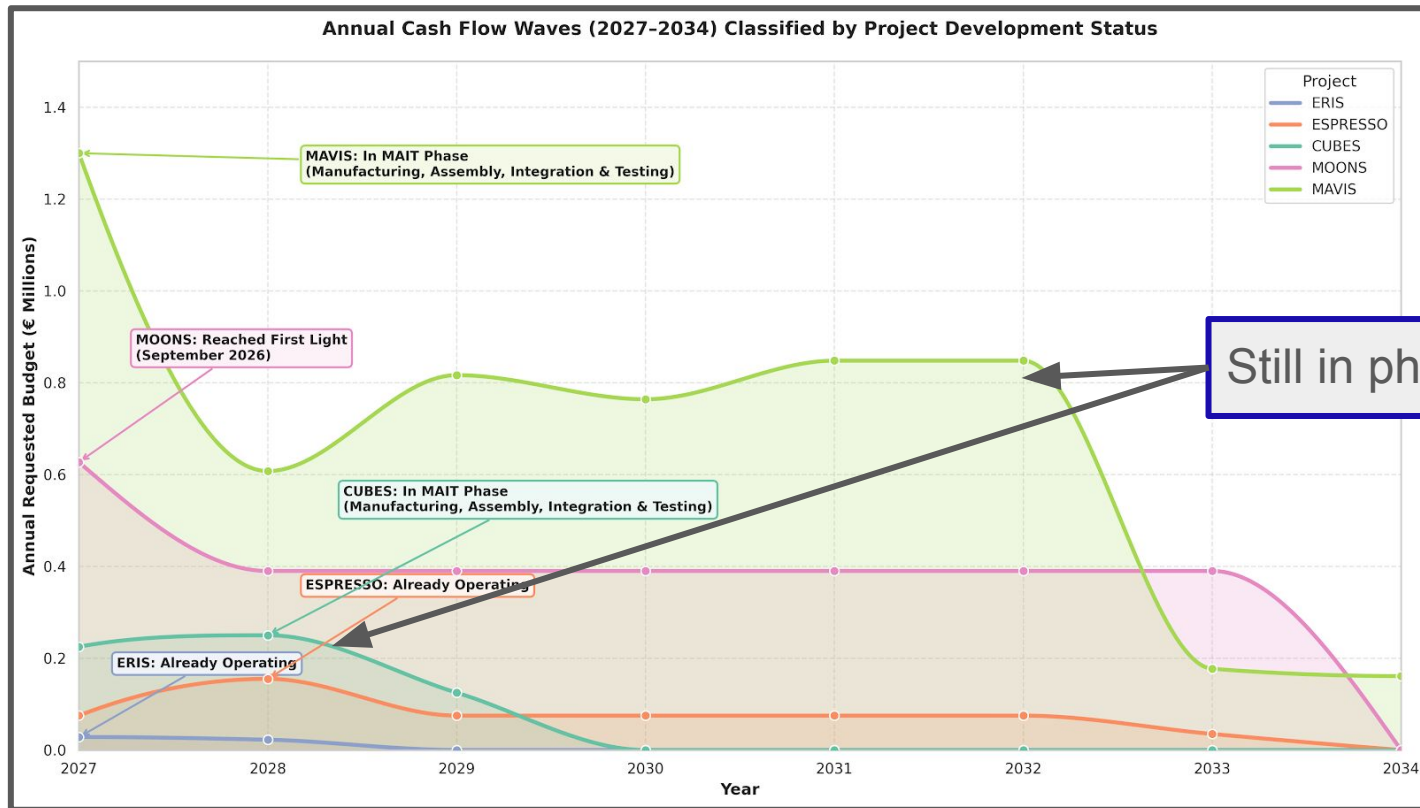


MAVIS:

/ Topic (€)



Summary of future INAF contribution for current and future VLT instrumentation



Still in phase D