

MASS e-NEWSLETTER

Fourth Issue: June 30th 2025

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Present status of MASS

The Master MASS activities are operating at full steam for the year 2024-2025 with the first Edition students having completed their Master theses, and the second edition on their way to completing within 3 months. The third edition is preparing to enter their second year, being split among the four universities. Meanwhile the selection of the fourth and final edition students has been completed.

Program and Curriculum Enhancements

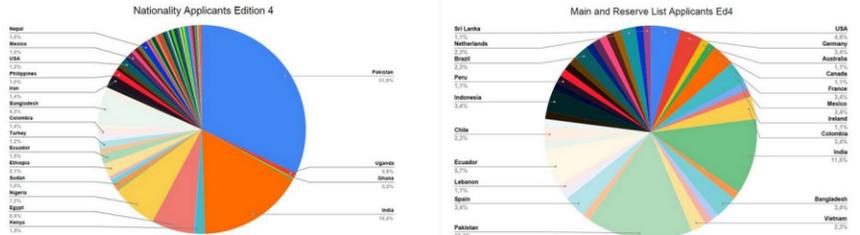
Several new optional courses were opened at UniCA: In *Statistical Methods*: an introductory course on machine learning applied to cosmology. In *Data Processing and Experimental Astronomy*: an experimental astronomy course held as a one-week mini internship at the Calern Observatory, where students had the opportunity to observe with two 1-meter telescopes on topics related to spectroscopy and photometry. This course was very popular among the students, all of whom chose to take it.

Edition-2 students conducted their 6 ECTS internships at their host institutions in order to prepare their S4 thesis projects, and these were presented during the Winter School 2025 in Rome. They are near to finalising their Master thesis projects which will be defended in September 2025. Several students are currently applying for a PhD and eight have already been accepted: 3 in Germany, 3 in France, 1 in Spain, and 1 in the US.

The First Mass Graduations took place in the period from December 2024 to March 2025. The first 13 students graduated from the program and their master theses are published in the Dissemination and Outreach section of the [MASS website](#). Eight of these students have continued to pursue a PhD; 3 continuing in Italy, 2 in Germany, 1 in Denmark, 1 in the UK and 1 in the USA. A further two students are currently applying for PhD positions.

Fourth intake of students

The fourth and final call for applications was open from 25th October 2024 to 14th February 2025. A total of 517 applications were received, comprising 279 eligible applications from a total of 54 countries, with a gender balance of 64%/35%/1% for male/female/non-binary. The selection committee worked to rank them with a score depending on academic achievements, CV and experience, quality of motivation letter, and reference letters. The final selection resulted in offers of 25 full scholarships (19 EMJM, 5 NDICI and 1 ASI) and 10 fee waivers to the highest ranked candidates.

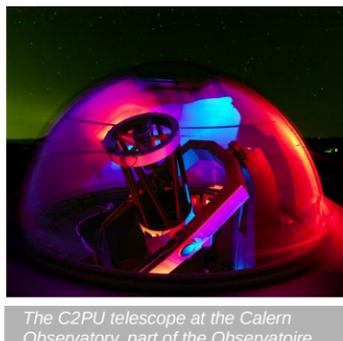


MASS applicant nationalities for Edition 4 (left), Awarded and Reserve list student nationalities (right)

Guest Lectures and Schools

The **Welcome Week** for the third intake took place between the 24th and 26th of September 2024, in the University of Rome Tor Vergata, where we welcomed 26 students from 16 countries (15 males, 10 females, 1 non-binary). The week comprised the presentation of courses and lectures offered by the four participating universities and was complemented by those of speakers from the MASS Third Parties, namely ADS International, Astronomical Observatory of Belgrade, Observatoire de la Côte d'Azur, ASI, National Institute for Astrophysics, Institute for Space Astrophysics and Planetology (INAF-IAPS), National Institute for Astrophysics, Astronomical Observatory of Rome (INAF-OAR), and Thales-Alenia Space (France). An Executive Board meeting also took place to discuss updates and pending issues.

The Second Summer School: organised by the Nice node took place between the 15th and 19th of July 2024 at the Centre International de Valbonne. The school focussed on observational and data analysis techniques. The students conducted real-time photometric and spectroscopic observations using the C2PU telescope located on the Plateau de Calern, which they piloted remotely, and analysed during the hands-on sessions. The S4 students took part in a fun competition "My thesis in 180s".



The C2PU telescope at the Calern Observatory, part of the Observatoire de la Côte d'Azur, France.

Several Welcome Days took place at the beginning of Semesters 2 and 3 in each of the nodes. The Welcome Day at UniCA for Edition-2 S3 students took place on October 1st 2024, and for Edition-2 S2 students on March 10th 2025. At UBG welcome days took place in September 2024 and March 2025. Visits to the local facilities and laboratories were an intricate part of the visits, such as the Artemis experimental lab and the Patrimonial Grand Coupole at the Observatoire de la Côte d'Azur (Nice), and the local facilities and libraries and a visit to the Laboratory for Plasma Physics (UBG).

Distinguished Speakers: The program hosted several high-profile guest speakers, leading experts from international reputations during the course year, and also during the winter and summer schools.

In Oct/Nov 2024, Dr Paula Sanchez Saez, from the European Southern Observatory, Germany, visited the Belgrade node. Her expertise is transients and variable objects. Dr. Sanchez Saez participated in lectures within the course "Astroinformatics – Astrostatistics and Machine Learning in Astronomy", and organized together with Prof. Andjelka Kovacevic, the Data Challenge for Machine Learning tools. She also provided a lecture on ESO facilities and observatory tools within the course "Astrophysical techniques".

In May 2025, Prof. Federica Bianco, University of Delaware, visited the Belgrade node. Her expertise is in time-domain astronomy and AI. Dr. Bianco provided lectures on AI tools and participated in the preparation of the third MASS Summer School which will focus on machine learning applications.



MASS participants during the Winter School 2025

The third Winter School took place in Rome between the 25th and 28th of February 2025 in the Physics Department in Tor Vergata. The focus was on space-based observations of Mercury from the Bepi-Colombo mission. The school had a mixture of lecture and hands-on sessions

where emphasis was placed on the analysis of spectroscopic data from the raw data to the astrophysical data product.

Outreach activities

The Annual Report on outreach activities was delivered by the MASS consortium. Outreach activities include workshops, events and open days, presentations to local councils, along with communication activities through websites and social media.

European Researchers Night:

The Rome and Belgrade nodes took part in the European Researcher's Night, during the month of September 2024. Several stands were available including the MASS roll-up banner and informational material in order to present, describe and promote the MASS program. Several MASS students participated in the events, through promoting the MASS program and presenting their work during the Master course. A dedicated brochure with the thesis summaries was produced by the students and is available on the mass website.

Professional Training

Several MASS students participated in national and international **conferences organised within the framework of their host institutions**. Two MASS students participated in the **CHARA Interferometry meeting**, hosted in Nice, with one presenting their Master thesis work as an oral presentation. Three MASS students participated in the **15th Serbian Conference on Spectral Line Shapes in Astrophysics**, Nis, Serbia, 9-13 June 2025, by preparing poster contributions. MASS students also participated in other **conferences** such as the **International Conference on Machine Learning for Astrophysics**, Catania (July 2024), **Catching supermassive black holes with Rubin-LSST: Towards novel insights and discoveries into AGN science**, Pino Torinese, Torino (July 2024), **LIGO-Virgo-KAGRA Collaboration meeting**, Barcelona (September 2024), and **Horizons for Optical Long Baseline Interferometry**, Paris Observatory, Meudon (January 2025).

MASS students were very active participating in **workshops and schools**: 7th Institute of Space Sciences Summer School, Barcelona (July 2024), ZTF Summer School on AI and machine learning, Barcelona (July 2024), University of Minnesota (July 2024), **Sagan Exoplanet Workshops**, California Institute of Technology (July 2024), **IMPRS Summer School on Cosmology**, Heidelberg (September 2024), **Tenth European Radio Interferometry School - ERIS 2024**, Granada (October 2024), **CESAM2K20 Workshop on stellar evolution**, Paris (November 2024), **XVII Black Holes Workshop**, December 2024, University of Aveiro, Portugal (December 2024), and **Workshop on Quantum Spacetime and the Renormalization Group 2025**, Heidelberg University (April 2025).

Several students from the MASS program obtained **summer internships**: During Summer 2024 the following institutes hosted MASS students: the Max Planck Institute for Astronomy, Heidelberg, the Max Planck Institute for Physics, Garching, LOFAR-Bulgaria at the Institute for Astronomy, Bulgarian Academy of Sciences, and the Instituto de Astrofísica de Canarias.

While this coming Summer MASS students will be hosted at the Astrophysics Research Institute in the UK, ASTRON in Dwingeloo, The Netherlands, and the University of the Basque Country in Leioa, Spain to conduct short internships.



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