



MAYORANA

Multi-Aspect Young-ORiented Advanced Neutrino Academy

SECOND CIRCULAR

The Multi-Aspect Young Oriented Advanced Neutrino Academy (MAYORANA) School&Workshop will be held in Modica (Italy) on **June 16th - 25th, 2025**.

This circular will also be available on the event website:

<https://agenda.infn.it/e/mayorana2025>

Event Venue

The MAYORANA School&Workshop scientific sessions will be held in Modica downtown, at the historical *Palazzo Grimaldi*, located in Corso Umberto I, 106, Modica, Italy.

The event is supported by University of Catania, Istituto Nazionale di Fisica Nucleare, Fondazione Grimaldi, Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali del Sud, Istituto Nazionale di Fisica Nucleare - Sezione di Catania, Dipartimento di Fisica ed Astronomia "E. Majorana" dell'Università di Catania, Società Italiana di Fisica, European Physical Society, Centro Siciliano di Fisica Nucleare e Struttura della Materia, CAEN SpA, and Cioccolato di Modica IGP.

Scope and Scientific Program

The main objective of MAYORANA is to promote a collaborative framework of young and senior researchers in the fields of nuclear, particle and astroparticle neutrino physics to discuss theories and experiments in which interdisciplinary aspects are particularly relevant.

At present, neutrino physics is developing more and more toward a cross-disciplinary approach, but still much needs to be done. The overlap between different communities is an unavoidable, despite demanding, feature to face several challenges of this research field. The sharing of different experimental and theoretical techniques and the exchange of technical experiences and know-how are among the best resources to this ambitious goal.

In this context, it is of utmost importance to allow young and senior researchers working at the intersections of these fields to meet regularly to exchange ideas and results.

In this view the proposed School&Workshop format for MAYORANA is designed to integrate the lecture-based content of a School, targeting students and young researchers, with the advanced talks of a Workshop addressed to experts of the field. Thus, the two event pillars give the young researchers the chance of a synergic exposure to basic as well as advanced information from top-level worldwide experts of the field.

The MAYORANA School&Workshop is a 2-year periodic meeting. The first successful edition was held in Modica in 2023 (MAYORANA School&Workshop 2023).

The list of the topics to be developed during the School and the Workshop is given below:

- Double beta decay
- Nuclear structure in connection with neutrino physics
- Neutrino nucleus interactions at low and high energy
- Nuclear reactions for weak interactions
- Supernova models and detection of supernovae neutrinos
- Solar models
- Direct and indirect dark matter searches
- Rare beta decay of nuclei for neutrino mass measurement
- Neutrino oscillation and matter effect
- Anomalies in reactor neutrinos
- Ultra-high energy astroparticle neutrinos and the multi-messenger scenario
- New related detection technologies
- Artificial intelligence for DAQ and data analysis

Format

The MAYORANA Workshop will take place from June 16 to 18, 2025.

The format of the **MAYORANA Workshop** consists of plenary sessions hosting invited and contributed talks, selected among the abstracts submitted by the participants. The preliminary list of invited speakers is available at the Workshop web site link [Workshop Invited Speaker](#) .

The MAYORANA School will take place from June 19 to 25, 2025.

The program of the **MAYORANA School**, available at the website link [MAYORANA School timetable](#) foresees lecture, poster, discussion and mini-talk sessions. The list of the lectures is given below.

During the lecture sessions high-ranked worldwide experts will present each one a three-four hours program focused on a specific hot topic of the field addressed to students and young researchers with different scientific background. Discussion sessions are specifically conceived to allow students and junior scientists a direct and informal interaction with teachers.

The students and young researchers are invited to prepare a poster describing their present activity and plans for the future. The size of the poster should be compliant with the A0 standard, corresponding to 84,1 cm x 118,9 cm. A permanent exposition of the posters will be arranged in dedicated rooms of the palace. The-participants are also asked to prepare a

short presentation to summarize the content of the poster during dedicated mini-talk sessions.

Proceedings of the poster and mini-talk contributions will be published on-line, upon peer review process, in the "Il Nuovo Cimento C" journal, which is indexed on Scopus, ADS, INSPEC and INSPIRE.

The best three contributions will be honoured with a dedicated award, delivered during the School social dinner on June 24th, 2025.

Students who need a didactic credit for their attendance at the School will be examined and, in case of positive result, receive a proper certificate.

Program of the School Lectures

- ✓ Vincenzo Cirigliano,
University of Washington, Seattle, US
Nuclear Double Beta Decays and Lepton Number Violation
- ✓ Joseph A. Formaggio,
Massachusetts Institute of Technology, Massachusetts, US
Neutrino - Nucleus Interaction across Energy Scales
- ✓ Toshitaka Kajino,
Beihang University, Beijing, P.R. China
Neutrinos and Nucleosynthesis in Cosmic and Stellar Evolution
- ✓ Livia Ludhova,
Johannes Gutenberg Universitat, Mainz, Germany
Neutrinos as Probes of the Sun's Core and Earth's Interior
- ✓ Michele Maltoni,
Consejo Superior de Investigaciones Científicas, Spain
Beyond three-neutrino oscillations: sterile neutrinos, NSI, and others
- ✓ Maurizio Spurio,
Università di Bologna, Bologna, Italy
Ultra High Energy Astroparticle Neutrinos
- ✓ Francesco Terranova,
Università di Milano-Bicocca, Milano, Italy
Neutrino Oscillations and Their Observation with Natural and Artificial Sources
- ✓ Francesco Vissani,
INFN-Laboratori Nazionali del Gran Sasso, Italy
Neutrino Masses, Flavour Oscillations and Matter Effects
- ✓ Yifang Wang,
Institute of High Energy Physics, Beijing, P.R. China

Proceedings

Proceedings will be published on-line, after peer review, in the “*Il Nuovo Cimento C*” journal, which is indexed on Scopus, ADS, INSPEC and INSPIRE. They will include contributions from:

- i) posters and mini-talks presented at the School;
- ii) viewpoints from the lecturers of the School;
- iii) talks presented at the Workshop.

Social Activities and Excursions

A public lecture will be held on Jun 16th 2025. The lecture is given by Prof. Salvatore Esposito of the University of Napoli “Federico II” and Istituto Nazionale di Fisica Nucleare section of Napoli.

An appealing excursion program is being organized for the School attendees. It includes tours of the baroque towns, part of the historical *Val di Noto* UNESCO World Heritage Site. Details of the program will be available at the website.

Two social dinners will be organized, one for the attendees of the School and the other for the participants of the Workshop. The Workshop dinner on June 17th, 2025 while the School social dinner will take place on June 24th, 2025.

Registration and Fee

The registration fee for the School is 200 €, for the Workshop is 200 €. The full registration fee for the School&Workshop is 400 €. A 5% discount will be guaranteed for EPS members. Students and young researchers with special motivations can ask for a specific support.

The School fee will cover coffee breaks, lunches, School social dinner, excursions, School packages, and proceedings.

The Workshop fee will cover coffee breaks, Workshop social dinner, Workshop package, and proceedings.

The deadline for the payment of the fee is May 31st, 2025. We kindly ask registered participants who have not paid the fee yet, to make the payment at their earliest convenience, following the instructions on the dedicated page of the conference website.

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All correspondence and requests for further information concerning the MAYORANA School&Workshop should be sent to the e-mail address: mayorana@dfa.unict.it

We look forward to seeing you in Modica,

The MAYORANA School&Workshop Organizing Committee