

The Italian Society of Neutron Sciences (SISN) organizes a three-year program of Advanced School called Training on Neutron Techniques (TNT).

Scopes and Topics

The fundamental principles of neutron scattering techniques for the investigation of condensed matter will be outlined, supported by examples and applications across a broad spectrum of scientific disciplines. The focus will include recent advancements and ongoing innovations in experimental methods at reactor-based facilities and spallation sources, with particular attention to the upcoming European Spallation Source (ESS). The 2025 edition will be devoted to Neutron Diffraction and Imaging, expanding to include non-scattering techniques and advanced approaches for data analysis and interpretation. Additionally, the integration of Artificial Intelligence (AI) and Machine Learning (ML) will be explored, highlighting their increasing significance in instrument design and data processing. Future editions in 2026 and 2027 will concentrate on Inelastic Scattering and Small Angle Scattering, as well as Reflectometry.

Program coordinator

Renato Magli (renato.magli@unimi.it)

Directors of the 2025 School

Francesco Cantini (CNR-IFAC, Sesto Fiorentino & INFN-CHNet)

Monica Ceretti (ICGM, CNRS Montpellier)

Scientific committee

Ubaldo Bafile (CNR-IFAC, Sesto Fiorentino)

Francesco Cantini (CNR-IFAC, Sesto Fiorentino & INFN-CHNet)

Milva Celli (CNR-IFAC, Sesto Fiorentino)

Monica Ceretti (ICGM, CNRS Montpellier)

Alessio De Francesco (ENEA, Frascati)

Leonardo del Rosso (CNR-IFAC, Sesto Fiorentino)

Francesco Grazzi (CNR-IFAC, Sesto Fiorentino & INFN-CHNet)

Eleonora Guarini (Univ. Firenze)

Alessandra Luchini (Univ. Perugia)

Antonino Pietropaolo (ENEA, Frascati)

Antonella Scherillo (ISIS, Didcot)

Ernesto Scoppola (Max Planck Institute of Colloids and Interfaces)

Francesco Spinozzi (Univ. Politecnica delle Marche)



A comprehensive program covering neutron diffraction, imaging, production, conditioning, activation analysis and capture, with advanced applications of AI and ML in neutron sciences



NEUTRON DIFFRACTION and IMAGING

13 - 21 June 2025

Programme

- Fundamentals
 - Neutron Physics
 - Neutron Scattering Theory
 - Neutron Sources, Beam Conditioning and Instrumentation
- Neutron diffraction
 - Crystallography
 - Powder/Single Crystal/Disordered Systems
 - Magnetic Structures
 - Applications in Engineering, Energy Materials, Cultural Heritage
- Activation Analysis & Neutron Capture
- Neutron Imaging
 - Basic principles
 - Neutron Tomography and Data Reconstruction
 - Advanced Techniques (Bragg edge analysis, phase contrast, grating interferometry, resonance imaging, etc.)
- Artificial Intelligence & Machine Learning
 - Basic Principles and Applications
- Tutorials: Small groups of students with tutors



Registration & Fees

A maximum of 25 students will be accepted. Interested candidates should fill in the Application Form available at <https://www.sisn.it/formazione/tnt/> and upload a short CV. The organizers will evaluate the applications and notify candidates of their final acceptance according to the expected timeline.

- The registration fees are 650 €. The full-board costs (accommodation in a 3-star hotel and all meals included) are 580 €.
- 10 scholarships of 850 € each will be available from ENEN. To be considered for a scholarship, candidates must also register and apply via the website: https://mobility.enen.eu/prog/individuals_applying_to_group_events/
- Also a number of up to 15 SISN scholarships will be available to cover the full-board costs.

General Information

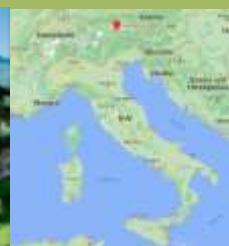
The School is open to **Graduate** and **PhD students** and to **Post-Docs** working in scientific disciplines as Biology, Chemistry, Earth Sciences, Material Sciences, Physics, Sciences for Cultural Heritage Conservation, and similar.

The language of the School will be English. The program of the School will start on Saturday morning June 14th and finish on Saturday morning June 21st 2025. General lessons will be held each morning, while the afternoons will be mainly devoted to applicative seminars and tutorial activities with small groups of students.

The School will be hosted at the Hotel Steinpent, San Giovanni, Valle Aurina (Bz), Italy, and the students will be accommodated in shared rooms. Students are requested to arrive at the Hotel by 7:00 pm on Friday June 13th.



<https://www.steinpent.com>
St. Johann, Ahrn 9, I-39030 Valle Aurina (BZ)
GPS East: 11°56'7" - North: 46°58'22"



Important dates

- Pre-registration deadline: April 6, 2025
- Preliminary acceptance: April 16, 2025
- Fee payment deadline: May 4, 2025
- Final acceptance: May 12, 2025



Further Information

(please refer to one of these e-mail addresses in case of any question)

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