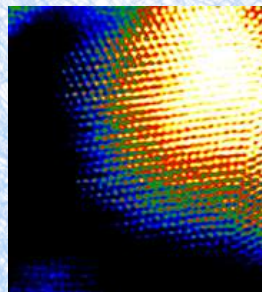
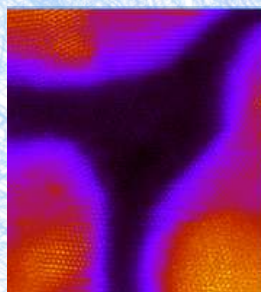
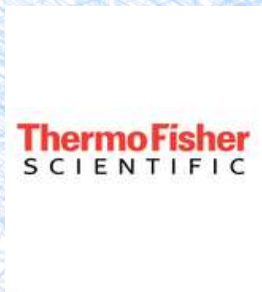
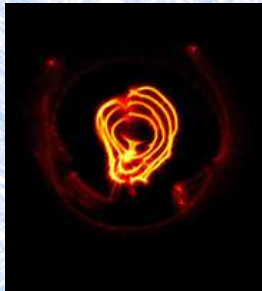
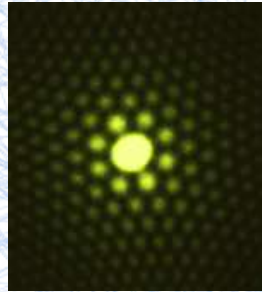


SPEQTEM

TRANSMISSION ELECTRON MICROSCOPE

Inauguration Event
January 24, 2025



**PHYSICS BUILDING
MODENA | VIA CAMPI 213/A
ROOM L1.1**

SPEAKERS



Dr. Vincenzo Grillo

Research Director at Cnr-Nano in Modena (Italy) where he coordinates the TEM group. PI of QSORT and other relevant EU projects, recipient of the Ernst Ruska and Bessel awards for electron microscopy.

Prof. Marco Beleggia

Full Professor at the University of Modena and Reggio Emilia (Italy), expert in coherent electron imaging for mapping nanoscale spin and charge distributions in advanced materials.



Dr. Rafal Dunin-Borkowski

Director of the Ernst Ruska Centre at the Forschungszentrum Jülich (Germany), the largest laboratory of electron microscopy in Europe. A pioneer of phase methods in microscopy.

Prof. Eva Olsson

Professor of Experimental Physics, Department of Physics in Chalmers University of Technology, Gothenburg (Sweden).
Head of the Division of Nano and Biophysics.
Chair of Chalmers Faculty Senate.
President of the International Societies for Microscopy.



Dr. Peter Tiemeijer

Principal Scientist at Thermo Fisher Scientific in Eindhoven (the Netherlands), each Thermo Fisher TEM carries his optics designs.

Prof. Ido Kaminer

Full professor at Technion, Haifa (Israel). One of the world leaders in ultrafast TEM and quantum microscopy.



Prof. Ebrahim Karimi

Chair of Excellence at the University of Ottawa (Canada). One of the world leaders in quantum optics, quantum cryptography, structured electron, and photon waves.



Finanziato dall'Unione europea
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PIANO NAZIONALE DI RIPRESA E RESILIENZA

AGENDA

Introducing the new SPEQTEM laboratory

10:00 - 10:10	Welcome Prof. Gaetano Scamarcio, Director (Cnr Nano) and Prof. Sergio Polidoro, Director (Dept of Physics, Informatics and Mathematics, Unimore)
10:10 - 10:20	Prof. Maria Chiara Carrozza, President (Cnr)
10:20 - 10:30	Prof. Carlo Adolfo Porro, Rector (Unimore)
10:30 - 10:40	Civil Authorities
10:40 - 11:00	Dr. Stefano Fabris, Director (Cnr Dsftm) and Dr. Vittorio Morandi, Director (Cnr ISMN and IEntrance)
11:00 - 11:10	Dr. Alberto Tinti (Thermo Fisher Scientific)
11:10 - 11:50	The new SPEQTEM lab. Dr. Vincenzo Grillo (Cnr Nano)
11:50 - 12:30	Visit of the microscope facility
12:30 - 14:00	Lunch Offered by Thermo Fisher Scientific

Symposium - TEM science, present and future

Chairs: Dr. Enzo Rotunno, Dr. Giovanni Bertoni, and Prof. Stefano Frabboni

14:00 - 14:30	"Design and AI-assisted optimization of electron phase plates for beam shaping" Prof. Marco Beleggia
14:30 - 15:00	"Progress and prospects in imaging topological magnetic textures using advanced transmission electron microscopy" Dr. Rafal Dunin-Borkowski
15:00 - 15:30	"Site-Specific Correlation Between Atomic Structure and Properties Using Electron Microscopy" Prof. Eva Olsson
15:30 - 16:10	Coffee break offered by Thermo Fisher Scientific
16:10 - 16:40	"TEM optical developments at Thermo Fisher Scientific" Dr. Peter Tiemeijer
16:40 - 17:10	"Exploring the fundamentals of QED in transmission electron microscopes" Prof. Ido Kaminer
17:10 - 17:40	"Quantum Imaging of Bi-photon States and their Applications in Quantum Imaging" Prof. Ebrahim Karimi
17:40 - 17:50	Closing Remarks

SPEQTEM IN BRIEF

SPEQTEM (Spectroscopic Quantum TEM) is an advanced microscope equipped with a monochromator, energy filter, and attachments for electron beam shaping and quantum control. In addition to enabling atomic resolution imaging of materials, it also facilitates the study of its coherent excitation and internal electromagnetic fields.

This microscope was acquired through funding from IEntrance, NQSTI, Smart Electron, and Impress projects. Its goal is to become a leading centre for spectroscopy and quantum-based microscopy.

The microscope is designed for two main purposes:

- Serving as part of the IEntrance Infrastructure for energy with high-resolution spectroscopy characterization and methods;
- Providing a platform for innovative quantum electron optics experiments in collaboration with Thermo Fisher and academic partners.

CHARACTERISTICS	THERMO FISHER SPECTRA 300		
Energy	60-300 keV	STEM Resolution	0.14 nm
Emitter	X-FEG	Energy Resolution	50 meV
TEM Resolution	0.10 nm		

TEM GROUP @MODENA

The TEM Microscopy group of Modena is a joint centre that involves CNR Nano and the FIM Department of UNIMORE, and has a long-standing collaboration with the Unimore CIGS Instrument Centre. The group's strengths lie in the AI control/automation of the microscope, the measurement of electromagnetic fields in materials, quantum-inspired microscopy and spectroscopy.

The group has steadily grown, attracting scientists and fostering new talents, becoming one of the largest aggregations of microscopy expertise in Italy. It has gained international recognition thanks to the participation in and coordination of major EU projects, as well as to the conferring of the Ernst Ruska Prize, the main European award in electron microscopy, to Dr. Grillo and the group.

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