



INTERNATIONAL SCHOOL OF NONEQUILIBRIUM PHENOMENA

17th Course: *FLUCTUATIONS IN LIGHT-MATTER INTERACTION: QUANTUM AND THERMAL EMERGING REGIMES*

ERICE-SICILY: 29 MARCH – 3 APRIL 2026

Sponsored by the: • Italian Ministry of Education, University and Scientific Research • Sicilian Regional Government

PROGRAMME AND LECTURERS

Radiative heat transfer and metasurfaces

• A. ALU, CUNY - City University of New York, NY, US

Radiative heat transfer and metasurfaces

• C. ARGYROPOULOS, The Pennsylvania State University, University Park, PA, US

Radiative heat transfer

• P. BEN-ABDALLAH, Institut d'Optique, CNRS, Paris, FR

Quantum thermodynamics

• G. BENENTI, Università dell'Insubria, Como, IT

Radiative heat

• S.-A. BIEHS, Carl von Ossietzky University of Oldenburg, DE

Quantum thermodynamics

• S. CAMPBELL, University College, Dublin, IE

Radiative heat transfer

• S.G. CASTILLO LOPEZ, Universidad Nacional Autónoma de México, MX

Quantum and thermal fluctuations

• H.B. CHAN, HKUST, Hong Kong, CN

Quantum and thermal fluctuations

• D. DEAN, University of Bordeaux, FR

Quantum and thermal fluctuations

• N. FABBRI, CNR-INO Istituto Nazionale di Ottica, Firenze, IT

Quantum optics

• J. FEIST, UAM - Universidad Autónoma de Madrid, ES

Radiative heat transfer and metasurfaces

• S. FAN, Stanford University, CA, US

Quantum and thermal fluctuations

• C. HENKEL, Universität Potsdam, DE

Quantum thermodynamics

• A. IMPARATO, University of Trieste, IT

Quantum and thermal fluctuations

• Q. JIANG, Shanghai Jiao Tong University, CN

Radiative heat transfer

• A. KITTEL, Carl von Ossietzky University of Oldenburg, DE

Radiative heat transfer

• M. KRÜGER, University of Göttingen, DE

Quantum thermodynamics

• G. LANDI, University of Rochester, US

Radiative heat transfer

• B.J. LEE, KAIST, Daejeon, KR

Quantum and thermal fluctuations

• S. MAJUMDAR, University of Paris-Saclay and CNRS, FR

Radiative heat transfer and metasurfaces

• S. MANN, University of Amsterdam, NL

Radiative heat transfer

• P. REDDY, University of Michigan, Ann Arbor, MI, US

Quantum and thermal fluctuations

• P. RODRIGUEZ LOPEZ, Universidad Rey Juan Carlos, Madrid, ES

Quantum and thermal fluctuations

• T. SHEGAI, Chalmers University of Technology, Göteborg, SE

Radiative heat transfer and metasurfaces

• S. SHEN, Carnegie Mellon University, Pittsburgh, PA, US

Quantum and thermal fluctuations

• M.G. SILVEIRINHA, Instituto Superior Técnico, Universidade de Lisboa, PT

Quantum optics

• J. SPLETTSTÖSSER, Chalmers University of Technology, Göteborg, SE

Radiative heat transfer and metasurfaces

• S. VOLZ, IIS, The University of Tokyo, JP

PURPOSE OF THE COURSE

Understanding the fundamental mechanisms governing light-matter interaction and energy exchange at the quantum level is essential for advancing both foundational physics and emerging technologies. Phenomena such as the Casimir effect, radiative heat transfer, and quantum energy transport reveal intricate connections between thermodynamics, quantum coherence, and nanoscale systems. These processes not only challenge our theoretical frameworks but also open pathways toward novel applications in quantum information, energy harvesting, and nanophotonics. Recent progress has highlighted the role of non-equilibrium dynamics and fluctuation-induced forces in shaping energy flow and entropy production at microscopic scales, sparking intense research activity across disciplines. This Course aims to provide a comprehensive perspective on these developments, combining lectures and discussions on quantum thermodynamics, nanophotonic platforms, and related topics. By bringing together senior scientists and young researchers, we seek to foster collaboration and inspire new directions in this rapidly evolving field.

APPLICATIONS

Persons wishing to attend the Course should send an application, by electronic mail, to:

Professor Bernardo Spagnolo
email: bernardo.spagnolo@unipa.it

Specifying:

- i) Date and place of birth together with present nationality;
- ii) Present position and place of work;
- iii) An abstract, if they wish to give a contribution (oral or poster).

PLEASE NOTE

Participants must arrive in Erice no later than 12 a.m. on 29th March 2026

POETIC TOUCH

According to legend, Erice, son of Venus and Neptune, founded a small town on top of a mountain (750 metres above sea level) more than three thousand years ago. The founder of modern history — i.e. the recording of events in a methodic and chronological sequence as they really happened without reference to mythical causes — the great Thucydides (~500 B.C.), writing about events connected with the conquest of Troy (1183 B.C.) said: «*After the fall of Troy some Trojans on their escape from the Achaei arrived in Sicily by boat and as they settled near the border with the Sicanians all together they were named Elymi: their towns were Segesta and Erice.*»

This inspired Virgil to describe the arrival of the Trojan royal family in Erice and the burial of Anchises, by his son Aeneas, on the coast below Erice. Homer (~1000 B.C.), Theocritus (~300 B.C.), Polybius (~200 B.C.), Virgil (~50 B.C.), Horace (~20 B.C.), and others have celebrated this magnificent spot in Sicily in their poems. During seven centuries (XIII-XIX) the town of Erice was under the leadership of a local oligarchy, whose wisdom assured a long period of cultural development and economic prosperity which in turn gave rise to the many churches, monasteries and private palaces which you see today.

In Erice you can admire the Castle of Venus, the Cyclopean Walls (~800 B.C.) and the Gothic Cathedral (~1300 A.D.). Erice is at present a mixture of ancient and medieval architecture. Other masterpieces of ancient civilization are to be found in the neighbourhood: at Motya (Phoenician), Segesta (Elymian), and Selinunte (Greek). On the Aegadian Islands — theatre of the decisive naval battle of the first Punic War (264-241 B.C.) — suggestive neolithic and paleolithic vestiges are still visible: the grottoes of Favignana, the carvings and murals of Levanzo.

More information about the activities of the Ettore Majorana Foundation
can be found on the WWW at the following address:
<https://ettoremajoranafoundation.it>