Politecnico di Torino
Department of Electronics and Telecommunications

INRiM
ISTITUTO NAZIONALE DI RICERCA METROLOGICA

Scientific Seminar organized within the framework of the Master in Quantum Engineering

Prof. Lucia Caspani

Università dell'Insubria, Como (Italy)

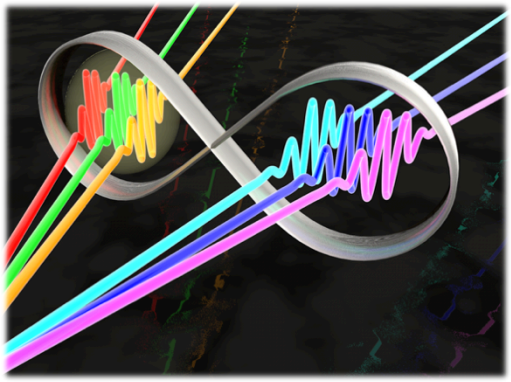
Title: Nonlinear optics for quantum science

May 29, 2026 – 10:00 AM

INRiM – Istituto Nazionale di Ricerca Metrologica

Conference Hall, Building M (floor -2), Strada delle Cacce 91, Torino

For streaming: **https://meet.google.com/seh-szuw-eyj**



Abstract: Quantum states of light play a crucial role in the advancement of quantum technologies. In this seminar, I will briefly review the most common forms of quantum light, such as squeezed states, single and entangled photons, and explore how they can be generated using nonlinear optical processes. In the final part, we will examine approaches to miniaturize these quantum light sources onto photonic chips, highlighting the advantages and challenges of integrated quantum photonics.

Bio:

Dr Lucia Caspani received her B.Sc. (2003), M.Sc. (2006), and PhD (2010) in Physics from Insubria University, Como, Italy. Her research focuses on the generation of complex quantum states of light and their applications in imaging, computing, and communication.

From April 2011 to May 2014, Dr. Caspani was a postdoctoral fellow at INRS-EMT in Montreal, Canada. During this time, she worked on experimental nonlinear and integrated quantum optics, focusing on the generation of multimode/multiphoton entanglement on chip, as well as on the generation and detection of THz radiation.

Subsequently, from July 2014 to January 2017, she was a Marie Curie Fellow at Heriot-Watt University in Edinburgh, UK, where she conducted research on entangled photon triplets, nonlinearity in 2D materials, and enhanced nonlinearity in low-permittivity media.
In February 2017, Dr Caspani joined the Institute of Photonics at the Department of Physics, University of Strathclyde, Glasgow, UK, as a Research Fellow. She was appointed Chancellor's Fellow (Lecturer, Assistant Professor) in June 2018 and promoted to Senior Lecturer in 2021. Her work at the University of Strathclyde was supported by the Fraunhofer Centre for Applied Photonics in Glasgow.
Since May 2024, Dr Caspani is Professor of Physics at Insubria University (Como, Italy) in the Dipartimento di Scienza e Alta Tecnologia, where she started an ERC Consolidator grant (2024-2029) to investigate quantum-enhanced nonlinear imaging. She is a member of the Como Lake Institute of Photonics.