SEMINAR

April,10 2026 – 11:00 am
Room C - Marzolo Building
Dept. of Physics and Astronomy

Clara Zaccaria
Department of Physics, University of Trento

Photonic platforms for single-cell in vitro optogenetics

Investigating the processes underlying brain activity can be challenging. Traditional in vivo experiments involve millions of different cells, making it difficult to isolate and study individual processes. This is where in vitro techniques can provide a controlled environment to explore mechanisms involved in processes like memory formation or abnormal network activity. From a digital light processing (DLP) device integrated within a confocal microscope to the development of integrated photonic neural interfaces, the seminar will explore the challenges and capabilities of such techniques, also in combination with functional imaging and immunostaining techniques.

Biography
After obtaining her degree in Physics at the University of Padua in 2018, Clara Zaccaria was enrolled as a PhD student within the ERC Backup project at the University of Trento, in the Nanoscience Laboratory (supervisor, L. Pavesi). Here, she focused on developing optical platforms for optogenetic experiments on in vitro neuronal cultures, coupling this technique with optical (calcium imaging), electrophysiological (multi-electrode arrays – MEAs), and immunostaining analyses. Since 2022, she has been a postdoctoral researcher under Fondazione Caritro funding, developing the research carried out during her PhD. In 2024–2025, she won the Kavli Exploration Award under the Kavli Foundation Sculpted Light Program with the project “An All-Optical Nanophotonic Neural Interface,” in collaboration with Aseema Mohanty from Tufts University in Boston.

Local contact filippo.pisano@unipd.it