UNIVERSITÀ DEGLI STUDI
DI TRENTO
Dipartimento di Fisica

Prof. Luca Dal Negro

Boston University

Thursday 17th September 2026 - 2:30 p.m.
Room A210 – Polo Ferrari 1

Aperiodic Photonics: from Physics to Device Engineering

Abstract:

The ability to engineer complex wave fields and electromagnetic interactions in optical structures with arbitrary geometries and material dispersion properties is essential to the advancement of nanophotonics and metamaterials technologies. In particular, recent progress in the design, fabrication and characterization of metal-dielectric nanostructures offers unique opportunities to achieve novel optical functionalities driven by enhanced linear and nonlinear optical interactions in environments with tailored disorder and aperiodic order. In this talk, I will discuss our work on the design and engineering of novel functional materials and optical components driven by anomalous light transport, resonant multiple scattering, and wave localization phenomena in tailored photonic systems with hyperuniform geometry and controllable long-range correlations. Finally, I will address the integration of designed aperiodic photonic structures on the widespread silicon platform and showcase critical applications to solid-state lighting, random lasing, multispectral imaging, and speckle- driven optical spectroscopy.

Contact:
Department of Physics
Via Sommarive, 14
38123 Povo, Trento
+39 0461/283172
chiara.rindone@unitn.it

Scientific Coordinator:
prof. Lorenzo Pavesi