

## JOINT PHD SEMINAR

22 MAY 2026, AT 11.00 AM

ECT\* - VILLA TAMBOSI, VILLAZZANO

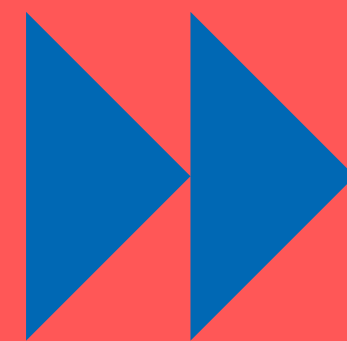
# ELECTRONIC-PHOTONIC INTEGRATED PLATFORM FOR QUANTUM SIMULATION: HARDWARE AND EXPERIMENTAL DEMONSTRATION

**Yong Kwon**

FBK-Fondazione Bruno Kessler

Photonics is a premier platform for the physical implementation of quantum simulation and computing, offering the distinct advantages of room-temperature operation and long coherence times. In this system, qubits are typically encoded via photons, with quantum logic realised through networks of beam splitters and phase shifters. While these can be implemented via bulk optics, integrated photonics provides key advantages, including scalability, miniaturisation, standardised fabrication, and enhanced system stability. In this talk, I will demonstrate recent developments in a full-stack integrated photonic-electronic quantum simulation platform, ranging from fundamental concepts in quantum information processing to the physical implementation of photonic integrated circuits. I will discuss how computational quantum states, gates, and circuits are mapped onto this architecture and explain the integration of these elements within a quantum photonic framework. To operate the platform as a quantum simulator, I will describe our photonic-electronic hardware and its control systems. Finally, I will present experimental results, including the implementation of quantum gates and pi-shift characterisation using continuous-wave light, demonstrating the platform's viability for scalable quantum computing and simulation.

*Please, facilitate the organization of the seminar and coffee break by registering via the QR code. Thank you.*



ECT\* Director: Prof. Ubirajara van Kolck

The ECT\* is part of the Fondazione Bruno Kessler. The Centre is funded by the Autonomous Province of Trento, funding agencies of EU Member and Associated states, and by INFN-TIFPA and has the support of the Department of Physics of the University of Trento.

For the organization please contact: Barbara Gazzolii – ECT\* Secretariat - Villa Tambosi - Strada delle Tabarelle 286 | 38123 Villazzano (Trento) – Italy Tel.:(+39-0461) 314763, E-mail: gazzolii@ectstar.eu or visit <http://www.ectstar.eu>