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BOSE COLLOQUIUM

(Through Webinar)

Date
27th November, 2020

Time
04:00 PM (IST)

Meeting Link

Speaker

Professor Lorenzo Pavesi
Nanoscience Laboratory, Department of Physics
University of Trento - Italy

Title of the talk : Quantum Silicon Photonics

Abstract:

We are on the dawn of the second quantum revolution, where single particles, quantum superposition and quantum entanglement are used to enable new technologies and devices. In this talk, I will review few devices, which are based on these concepts. In addition, I will show that Silicon Photonics is the proper platform to integrate quantum photonics. Indeed, Silicon Photonics is the technology to fabricate photonics devices with standard silicon microelectronics processing. By using Silicon Photonics, I will discuss:

1. a tiny, low cost, high performance fully silicon device to generate random numbers for security applictions,
2. a source of single photon entanglement which can be used as a resource for quantum information applications such as quantum key distribution or ascertified quantum random number generator,
3. a heralded single photon sources which works in the MIR and can be used for ghost imaging or undetected photon spectroscopy,
4. a near-ideal spontaneous photon sources in silicon quantum photonics which could enable a silicon quantum computer

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