

Nano Seminar Series

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Integrated Quantum Photonics With Single Emitters

MARCELO DAVANCO

Research Scientist
Physical Measurement Laboratory
National Institute of Standards and Technology
Gaithersburg, MD

Abstract: Passive integrated photonic devices have been shown to be an enabling resource for photonic quantum information systems. Incorporation of active, on-chip nanophotonic elements based on single solid-state quantum emitters, such as quantum dots, organic molecules, and point defects in various crystals, provides a promising path towards the creation of highly scalable systems and novel functionality for photonic quantum computation and simulation, communication and metrology. This talk will discuss effective methods for leveraging single quantum emitters as single-photon sources and highly nonlinear optical elements in chip-scale integrated quantum photonic circuits. As an example, a recently demonstrated heterogeneous photonic integration platform leveraging waveguide-coupled single-photon sources based on single InAs quantum dots will be discussed.

Biography: Marcelo Davanco is a scientist at the Physical Measurement Lab in the National Institute of Standards and Technology (NIST). He has BS and MS degrees from the State University of Campinas, Brazil, and a PhD in Electrical and Computer Engineering from the University of California, Santa Barbara, all in Electrical Engineering. Marcelo was a Postdoctoral Research Fellow at the University of Michigan and then at the NIST Center for Nanoscale Science and Technology, and has worked on a variety of topics in the field of nanophotonics.