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INVITED: SWIR/NIR SPAD Image Sensors for LIDAR and Quantum Imaging Applications

Monday 26 June 2023 13:15 (30 minutes)

In this talk, I will review the evolution of solid-state photon counting sensors from avalanche photodiodes (APDs) to silicon photomultipliers (SiPMs) to single-photon avalanche diodes (SPADs). The impact of these sensors on LiDAR has been remarkable, however, more innovations are to come with the continuous advance of integrated SPADs and the introduction of powerful computational imaging techniques directly coupled to SPADs/SiPMs. New technologies, such as 3D-stacking in combination with Ge and InP/InGaAs SPAD sensors, are accelerating the adoption of SWIR/NIR image sensors, while enabling new sensing functionalities. I will conclude the talk with a technological perspective on how all these technologies could come together in low-cost, computational-intensive image sensors, for affordable, yet powerful quantum imaging.

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