

TRR Guest Scientist Lecture / Seminar

Date/Time: 01.07.2021 / 16 o'clock

Location: Online - Zoom

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Advances in large-scale arrays of superconducting nanowire single-photon detectors

Abstract:

Over the past decade, superconducting nanowire single-photon detectors (SNSPDs) have emerged as the highest-performing detectors for time-correlated single-photon counting. They combine many desirable qualities for photon-counting detectors, such as high efficiency, low dark count rates, high timing resolution, and high dynamic range. Arrays of SNSPDs could be useful for a wide range of applications, from optical communication to quantum information science to particle physics and astronomy. However, scaling SNSPD arrays to larger pixel numbers is challenging because of the difficulties involved in reading out many high-speed channels from a cryogenic environment. To solve this challenge, different forms of cryogenic multiplexing have been proposed and demonstrated, but each comes with its own tradeoffs and challenges. In this talk, I'll describe the different applications of SNSPD arrays that we are pursuing at JPL, and I will discuss the multiplexing techniques we have explored for these applications.

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