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Superconducting Nanowire Single Photon Detectors for Dark Matter Detection and HEP

Wednesday, 8 November 2023 15:15 (15 minutes)

Superconducting nanowire single photon detectors (SNSPDs) are the most advanced sensors available for time-resolved single photon counting from the ultraviolet to the infrared. We will discuss recent advances in SNSPD technology, including demonstration of dark count rates below $1e-5$ cps, scaling to large-format arrays (up to 400 kpix), single-photon sensitivity at wavelengths as long as $29\ \mu\text{m}$, ultra-high time resolution (as short as 3ps FWHM at visible wavelengths), and ultra-high count rates (1.5 Gcps). We will discuss the prospects for extending these performance metrics even further, and discuss potential applications of SNSPD technology in HEP, including dark matter detection.

Presenter: SHAW, Matt (Jet Propulsion Laboratory)

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