

Advancing the State of the Art in SNSPD Performance

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In this talk I will present the recent commercial advancements made at Quantum Opus that have significantly improved overall SNSPD system performance in efficiency, count rate (recovery time), jitter, and dark rate. Additionally I will present results from recent innovations including devices demonstrating photon-number-resolution (PNR), polarization-independence, and large-area multimode fiber coupling. As an example of recent state-of-the-art device performance, Figure 1 (below) shows the high efficiency, low dark-rate, low jitter, and PNR capability up to three photons per absorption event. To conclude I will present some recent customer applications that have been the impetus for these innovations.

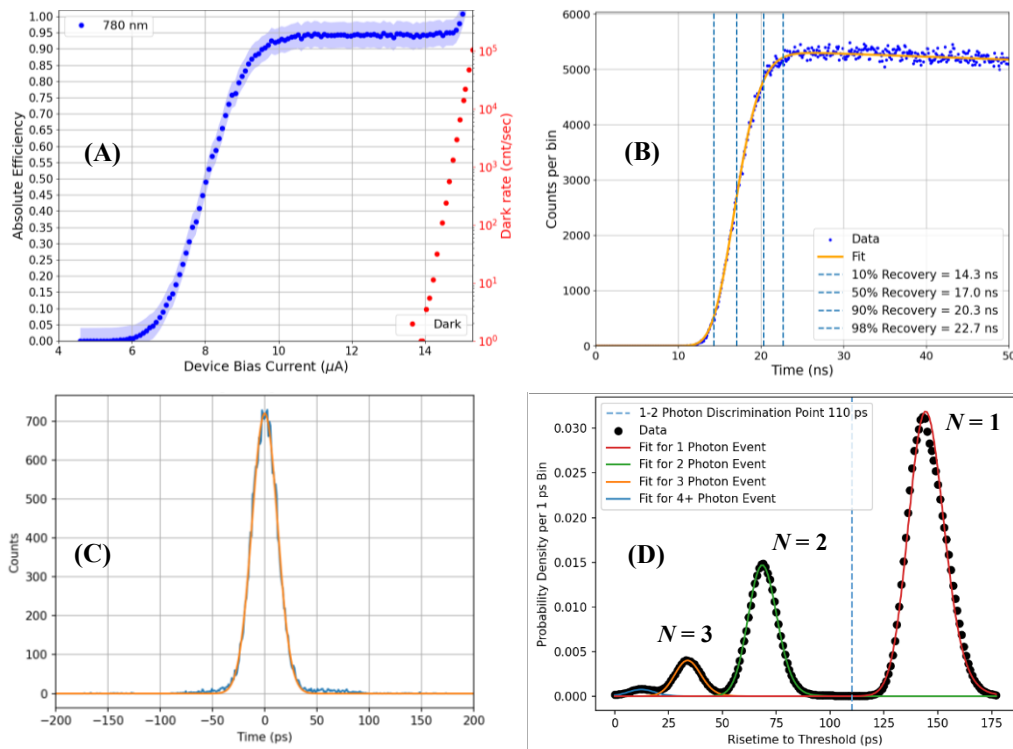


Figure 1 : Recent commercial device performance at 780 nm showing (A) absolute system efficiency over 95% and negligible dark rate, (B) pulse-pair timing distribution showing 17 ns recovery time (to 50% relative efficiency), (C) 16.6 ps FWHM system jitter (deconvolved), and (D) rise-time-based photon number resolution with >99% discrimination for pulses containing up to three photons.