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Using Kinetic Inductance Resonators to Readout Superconducting Nanowire Detectors

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We present the concept for a resonator-based readout for Superconducting Nanowire Single Photon Detectors (SNSPDs). SNSPDs are widely implemented as photodetectors in multiple applications because of their low timing jitter, high quantum efficiency and low dark count rate. In our scheme, the shunted current from the SNSPD is not routed to the input of a low noise amplifier, but is inductively coupled to a kinetic inductance resonator via a coupling coil. The induced current in the resonator changes the inductance of the resonator shifting its resonant structure. The resulting shift in resonant properties from the coupled SNSPD signal can be readily measured using techniques and instrumentation that have been successfully developed for kinetic inductance detectors and amplifiers. In this poster, we present an update on our research and development of this SNSPD readout technique.

Less than 5 years of experience since completion of Ph.D

N

Student (Ph.D., M.Sc. or B.Sc.)

N

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