Characterization of NbN-based SNSPD for 1064 nm wavelength

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Superconducting Nanowire Single-Photon Detectors (SNSPDs), which provide sub-20 ps timing jitter, low dark counts, and high system detection efficiency, are currently essential to many quantum technologies such as free space communications, remote sensing applications, security, and in astronomy [1-3]. We will provide a detailed characterisation data on a NbN-based SNSPD tuned for 1064 nm in this contribution. The NbN-based SNSPD is a photon-sensitive optical detector that operates in a current-carrying nanowire mode by breaking Cooper pairs upon photon impact. These kinds of detectors are very appealing for cutting-edge quantum technology applications including LiDAR (Light Detection and Ranging), quantum communications, and quantum sensing. SNSPD functioning in the ultra-low dark count rate zone is crucial for fundamental physics investigations like dark matter searches, in addition to the improved detection efficiency. In this contribution, we will present detailed results pertaining to this SNSPD from dark counts measurement perspective. The system detection efficiency (SDE) as measured in the device is shown in figure-1.

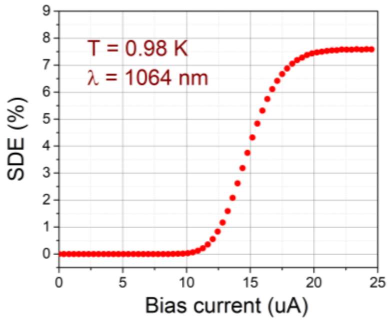

Fig. 1: *System Detection Efficiency measured as a function of Bias current, in a NbN-based SNSPD tuned for 1064 nm wavelength*

Funding acknowledgement

Authors acknowledge UK Science and Technology Facilities Council (STFC) for funding through the project 'Quantum Enhanced Interferometry for New Physics' (STFC awards ST/T005920/1, ST/W006278/1, ST/Y004396/1. Authors are also grateful to effective collaborations and support from QI/QTFP Project partners (Cardiff, Birmingham, Warwick & Strathclyde Universities, UK); team at DESY TES (Hamburg, Germany), NIST (USA) and PTB (Germany).

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*Revised abstract will be submitted once I receive approval from all the co-authors. Thanks!