

Publication

A superconducting nanowire single photon detector on lithium niobate

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 1542969

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Year 2012

Title A superconducting nanowire single photon detector on lithium niobate

Journal Nanotechnology

Volume 23

Number 50

Pages / Article-Number 505201

Superconducting nanowire single photon detectors (SNSPDs) are a key enabling technology for optical quantum information science. In this paper we demonstrate a SNSPD fabricated on lithium niobate, an important material for high speed integrated photonic circuits. We report a system detection efficiency of 0.15% at a 1 kHz dark count rate with a maximum of similar to 1% close to the critical current at 1550 nm wavelength for a parallel wire SNSPD with front side illumination. There is clear scope for improving on this performance with further materials optimization. Detector integration with a lithium niobate optical waveguide is simulated, demonstrating the potential for high single photon detection efficiency in an integrated quantum optic circuit.

Publisher IOP Publ.

ISSN/ISBN 0957-4484

edoc-URL <http://edoc.unibas.ch/dok/A6083406>

Full Text on edoc No;

Digital Object Identifier DOI 10.1088/0957-4484/23/50/505201

PubMed ID <http://www.ncbi.nlm.nih.gov/pubmed/23182967>

ISI-Number WOS:000311855300004

Document type (ISI) Journal Article