Photon detection at subwavelength scales

Wang, Q.

Stellingen

Behorend bij het proefschrift

Photon Detection at Subwavelength Scales

I. The accuracy of quantum detector tomography does not always improve by measuring over a longer time interval.
This thesis, *Chapter2*

II. To fully understand the response of a meandering superconducting single-photon detector it is necessary to introduce the concept of a local detection efficiency.
This thesis, *Chapter4*

III. Compared to conventional scanning near-field optical probes, a nanoscale superconducting single-photon detector has a better signal collection efficiency. Moreover, it perturbs the field to be studied less.
This thesis, *Chapter5*

IV. A probe based on a superconducting single-photon detector can reach a spatial resolution smaller than the size of the probe apex.
This thesis, *Chapter7*

V. The approach taken by Heath et al. to improve the detection efficiency of a superconducting single-photon detector is incomplete insofar that it does not take into account the absorption distribution across the nanowire.
Nano Lett., **15**, *819*(*2015*)

VI. Although it is possible for the intensity of the optical near field of a sharp tip or optical antenna to be enhanced by a factor 1000, this does not apply to the absorption cross section of a finite-sized nanodetector close to such a sharp tip or optical antenna.

VII. Surprisingly, the electromagnetic response of an antenna on a dielectric support, as simulated by F. Huth et al., can be well approximated by that of a bare optical antenna.
Nano Lett., **13**, *1065*(*2013*)

VIII. The polarization dependence of the response of superconducting single-photon detectors, e.g. given by V. Anant et al. and Q. Guo et al., cannot be fully understood from only measuring the overall click probability of the detectors.
Opt.Express, **16**, *10750(2008)* & *Sci.Rep.*, **5**, *9616(2015)*

IX. Scientific communication should be an open platform for exchanging knowledge.

Qiang Wang,
Leiden, 27 oktober 2015