

CNR-IFN, Single-Photon Detection with Integrated Superconducting Nanowires

Thu, 2016-11-10 12:02 - [Roberto Leoni](#) [1] **Website:**
<http://www.roma.ifn.cnr.it/> [2]

Research Type: Experiment

The Institute for Photonics and Nanotechnologies (IFN) is part of the Italian National Research Council (CNR), which is the largest public research institution in Italy. Research at the Rome unit is focused on the development of superconducting nanowire single photon detectors (SNSPDs) integrated with advanced optical cavities and passive quantum-optics circuits on semiconducting materials. IFN-CNR exploits a 200 m² clean room facility, equipped with a 100 kV Electron Beam Lithography system together with all the tools needed for micro and nanofabrication.

relevant publications

- JP Sprengers, A Gaggero, et al., Waveguide superconducting single-photon detectors for integrated quantum photonic circuits, *Applied Physics Letters* 99, 181110 (2011)
- A Gaggero et al, Nanowire superconducting single-photon detectors on GaAs for integrated quantum photonic applications, *Applied Physics Letters* 97, 151108 (2010).
- A. Divochiy et al., Superconducting nanowire photon number resolving detector at telecom wavelength, *Nature Photonics* 2, 302 (2008).
- Mattioli et al. Photon-Number-Resolving detectors, *Superconducting Science and technology*, 28, 104001 (2015)

relevant projects

- EU-FP6 SINPHONIA Single photon nanostructured detectors for advanced optical applications (2006)
- EU-FP7 QUANTIP Quantum Integrated Photonics (2010)
- EU-H2020 QUCHIP Quantum simulation on a photonic chip (2015)
- Australian Research Council, ARC Discovery Projects, DP140100808 Project on Large Scale and Ultrafast Integrated Quantum Photonics in Silicon Carbide (2014)
- Marie Curie ITN PICQUE (Photonic Integrated Compound Quantum Encoding) (2013)

Leader: Roberto Leoni

Location

Institute for Photonics and Nanotechnologies, CNR Via Cineto Romano 42
Roma 00156 Italy
41° 55' 46.4412" N, 12° 35' 50.4204" E

- [Quantum Communication](#) [3]
- [Quantum Engineering](#) [4]
- [Quantum Metrology, Sensing and Imaging](#) [5]
- [STREPs](#) [6]

Source URL:

<http://qurope.eu/db/groups/cnr-ifn-single-photon-detection-integrated-superconducting-nanowires>

Links:

- [1] <http://qurope.eu/users/robertoleoni>
- [2] <http://www.roma.ifn.cnr.it/>
- [3] <http://qurope.eu/category/vi/quantum-communication>
- [4] <http://qurope.eu/category/virtual-facility/quantum-engineering>
- [5] <http://qurope.eu/category/virtual-institute/quantum-metrology-sensing-and-imaging>
- [6] <http://qurope.eu/category/projects/streps>