

INSTITUT NEEL Grenoble

Post-doctoral position

A bright source of Indistinguishable Polarization-entangled On-Demand photon pairs

Context :

In the frame of the ANR project « A bright source of Indistinguishable Polarization-entangled On-Demand photon pairs », the team of Jean-Philippe Poizat (Institut Néel, CNRS Grenoble) together with Julien Claudon and Jean-Michel Gérard (IRIG, CEA Grenoble) offers a one-year postdoc position, with possibilities for extension.

The goal of this project is to design, fabricate and use a single semiconductor quantum dot (QD) embedded in an original nanocavity photonic waveguide to produce polarization entangled photon pairs with a very high quantum efficiency. The objective is to come up a device satisfying all the requirements for a realistic implementation in a quantum communication set-up.

Objectives :

Together with a PhD student, the post-doc will design and operate the experimental set-up to tune the spectroscopic properties of the QD, carry out resonant photoluminescence experiments and perform the entanglement measurements. This work will be done in very close collaboration with a PhD student and a post-doc of the CEA-IRIG team, next door, that will be in charge of the design and fabrication of the samples.

Means available:

The Institut Néel team operates a state of the art low temperature ($T=4K$) resonant micro-photoluminescence set-up including a picosecond Ti:sapph laser, several tunable laser diodes, a high resolution (12 μ eV) spectrometer with a CCD camera, avalanche photodiodes, and photon correlation software.

Institut Néel is part of the largest French national research institutes in condensed matter physics. Grenoble features a unique scientific, industrial and cultural ecosystem. It offers one of Europe's largest high-tech center with a very strong activity in quantum technologies. It benefits from an exceptional environment at the heart of the French Alps.

Required profile :

We are looking for a highly motivated post-doc with strong background in semiconductor optics and/or quantum optics. She/he must be able to supervise a PhD student and to conduct an experimental project with large autonomy. Work with Institut Néel technical staff and with our CEA-IRIG collaborators will require a strong team spirit.

Foreseen start for the position : End 2022

Salary : Between 2 648 and 3768 €monthly gross salary depending on experience.

Duration : 1 year, with possibilities for a one year extension.

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More information: <https://neel.cnrs.fr/equipes-poles-et-services/nanophysique-et-semiconducteurs-npsc>