Industrial Ph.D. student position in superconducting single photon detectors development

KTH Royal Institute of Technology, School of Engineering Sciences

KTH Royal Institute of Technology in Stockholm has grown to become one of Europe's leading technical and engineering universities, as well as a key centre of intellectual talent and innovation. We are Sweden's largest technical research and learning institution and home to students, researchers and faculty from around the world. Our research and education covers a wide area including natural sciences and all branches of engineering, as well as in architecture, industrial management, urban planning, history and philosophy.

Job description:

Single Quantum BV, a Dutch company developing high-performance single photon detectors offers an industrial PhD position to be based at KTH, Stockholm. Superconducting single photon detectors based on nanowires have emerged as the best solution for single photon detection in terms of detection efficiency, time resolution and noise level.

In this project, a PhD position is offered by Single Quantum to develop the next generation of single photon detectors at KTH in the Zwiller group. The work will rely on advanced nanofabrication along with optical experiments performed at the single photon level at cryogenic temperatures. You will open new frequency ranges for single photon detection, develop new readout schemes to reach unprecedented time resolution and demonstrate new functionalities such as photon number resolution, imaging and correlation imaging. The work will be based at KTH in close collaboration with Single Quantum in Delft, Netherlands.

The quantum and biophotonics unit at the Department of Applied Physics at the Royal Institute of Technology, situated in the AlbaNova University Center, is a dynamic and creative group with about 30 members working in an international and collaborative atmosphere. We perform both curiosity-driven and applied research, primarily experimental and often multi-disciplinary. We enjoy state of the art laboratories for quantum optics and nanotechnology, integrated nonlinear photonics, biomolecular imaging and spectroscopy.

Qualifications

Applicants should hold a Master of Science degree (or equivalent) fulfilling the entry requirements for doctoral education at KTH. The ideal candidate has a degree in Applied Physics, Engineering Physics Electrical Engineering or similar. Furthermore, the applicant must have:

- Strong academic credentials, English proficiency, communication and teamwork skills.
- Practical problem-solving skills, creativity, strong motivation for doctoral studies and the ability to work independently.
- Background in several of the following: quantum technology, optics/photonics, nanofabrication, electromagnetism, photonic devices, optoelectronics, quantum mechanics, programming.

A relevant degree project, preparation and readiness to work in a dynamic and internationally-oriented group, presentation and language skills are advantageous qualifications. Acquaintance with

nanotechnology tools and techniques for integrated optics, familiarity with fabrication work in cleanroom environments, modelling and experimental characterization of integrated photonic and/or quantum optic devices constitute further merits for the position.

Trade union representatives
You will be employed by Single Quantum BV in the Netherlands.

Application
The application must include the following documents:

- **Cover letter**: One-page summary of your application.
- **Curriculum vitae**: A document on all your relevant academic, professional, and other achievements, experience, and knowledge. Maximum four pages.
- **Transcripts and degrees**: Official documents from your previously attended University-level institutions, with certified translations in English (unless provided so by the issuing institution).
- **Recommendation letters**: At least two recommendation letters and detailed contact information for at least two references (including the two you arranged for).
- **Statement of purpose**: A document (maximum two pages long) where you discuss your motivation and research interests, your preparation (studies, technical knowledge, research, experience, etc.) towards a doctoral degree in the research topic, and your future goals.
- **Representative publications/technical reports**: up to two documents (up to twelve pages each). For longer documents (e.g., theses), please provide an abstract and a web link to the full text.

Email you application to sander@singlequantum.com

Others
The PhD student position is a full-time employment for four years with a possibility of maximum up to five years.
We firmly decline all contact with staffing and recruitment agencies and job ad salespersons.
Disclaimer: In case of discrepancy between the Swedish original and the English translation of the job announcement, the Swedish version takes precedence.

Type of employment:	Temporary position longer than 6 months
Contract type: (part time or full time)	Full time
First day of employment:	According to agreement, preferably as soon as possible
Salary:	According to the KTH “salary ladder” for doctoral students
Number of positions:	1
Working hours:	100%
Contact:	Prof. Val Zwiller, Phone: +46 73 765 2200, Email: zwiller@kth.se Dr. Sander Dorenbos, Phone: +31 6 28133534, Single Quantum, Email: sander@singlequantum.com
Last application date:	15 May 2018