Doctoral Researcher to study coherent interaction-free measurements using Superconducting Qubits and Circuit QED
Aalto University

Job Title	Doctoral Researcher to study coherent interaction-free measurements using Superconducting Qubits and Circuit QED
Department	T304 Dept. Applied Physics
Institution	Aalto University , , Finland
Date Posted	Aug. 15, 2024
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Graduate Student
Academic Field(s)	Physics - General
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Doctoral-Researcher-to-study-coherent-interaction-free-measurements-using-Superconducting-Qubits-and-Circuit-QED_R40450-2
Apply By Email	

Job Description

Aalto University is where science and art meet technology and business. We shape a sustainable future by making research breakthroughs in and across our disciplines, sparking the game changers of tomorrow and creating novel solutions to major global challenges. Our community is made up of 13 000 students, 400 professors and close to 4 500 other faculty and staff working on our dynamic campus in Espoo, Greater Helsinki, Finland. Diversity is part of who we are, and we actively work to ensure our community’s diversity and inclusiveness. This is why we warmly encourage qualified candidates from all backgrounds to join our community.

At the Department of Applied Physics, our pioneering research in physical sciences creates important

Doctoral Researcher to study coherent interaction-free measurements using Superconducting Qubits and Circuit QED

Aalto University

industrial applications that hold great technological potential. Our research focuses on Materials physics, Quantum technology, Soft & living matter, and Advanced energy solutions. Topics extend from fundamental research to important applications. We educate future generations of research and development professionals, data specialists, technology experts, inventors, and scientists for industry and society.

The Department of Applied Physics is inviting applications for a Doctoral Researcher position in Superconducting Qubits and Circuit QED. Our research group is part of the effort in nanoelectronics in the Low Temperature Laboratory, Department of Applied Physics. The group is doing research in such fields as quantum information and quantum-level effects in superconducting devices, quantum coherent matter, and interaction of electromagnetic fields with nano-structured materials. We are looking for a

Doctoral Researcher to study coherent interaction-free measurements using Superconducting Qubits and Circuit QED

We have a four-year Doctoral Researcher position funded by the Research Council of Finland. The position is primarily focused on coherent interaction-free measurements for the efficient detection of microwave photons, which can have a wide range of applications in the indirect capturing of the signatures of axions, laying the foundation for a new type of microwave spectrometer, counterfactual quantum computation, and secure quantum communication. This project utilizes superconducting quantum circuits as an experimental platform - presently one of the most promising platforms for future quantum computers and quantum simulators. This field of research has seen tremendous development in recent times, and currently offers plenty of exciting opportunities for developing yourself as a quantum physicist.

Your role and goals

You will work in the field of Superconducting Qubits and Circuit QED. Your project will focus on performing microwave measurements using dilution refrigerator, device fabrication using nano-fabrication techniques, and programming using Matlab, Python, Mathematica etc. for the simulations. Successful candidate should also have a strong aptitude towards research and ability to analyse and interpret the results.

Your network and team

The research will be conducted in the ‘Superconducting Qubits and Circuit QED (KVANTTI) group’ at the Department of Applied Physics, Aalto University, Finland, under the supervision of Academy

Doctoral Researcher to study coherent interaction-free measurements using Superconducting Qubits and Circuit QED

Aalto University

Research Fellow Dr. Shruti Dogra and the group leader Prof. Sorin Paraoanu.

Your experience and ambitions

We are looking for a bright, motivated researcher to join our team. You should have excellent study records in physics or related disciplines up to the level of MSc. Prior laboratory experience in the fields of mesoscopic physics, nanoelectronics, cryogenics, microwave electronics, circuit design, clean-room techniques, and instrument programming is a plus but not required.

Requirements * Master's degree (or soon to be obtained) in physics, or a related field with a strong base in quantum physics. * Self motivation and enthusiasm to pursue research. Good interpersonal skills and ability to work independently as well as in a team. * Prior experience in a programming language (e.g., MATLAB, Python) is a plus. * Experience using experimental setups or developing and testing experimental setups would be beneficial.

A successful candidate should demonstrate capability and willingness to learn new methods and have good written and oral communication skills in English (Finnish language is not required). The selected candidate needs to apply for the study right in doctoral studies at Aalto University School of Science. Please check the student information and admission criteria at [url=https://www.aalto.fi/en/node/175081]https://www.aalto.fi/en/study-options/aalto-doctoral-programme-in-science-0. Specifically, pay attention to the required language proficiency (English language).

What we offer

We offer an interdisciplinary and dynamic working environment. The successful candidate will have the chance to become an expert in the fast-developing field of quantum simulation and quantum information processing with superconducting qubits. You will be trained to perform advanced experimental research and develop theoretical models. You will have full access to the OtaNano research infrastructure for nano- and micro- technologies, comprising state-of-the-art equipment in nanofabrication, cryogenics, microscopy, and electronics. OtaNano operates the largest clean room in Northern Europe and our Low Temperature Laboratory (where the group is located) leverages unmatched expertise in cryogenics and low-noise measurements. The skills that you will acquire during your doctoral studies are currently in very high demand both in academia and in high-tech companies. You will be encouraged to build your scientific reputation by networking with our national and international collaborators, writing manuscripts, and participating in conferences to present your results.

The total duration of Ph.D. studies is four years. The contract will be made initially for two years, then

Doctoral Researcher to study coherent interaction-free measurements using Superconducting Qubits and Circuit QED

Aalto University

extended to another two years after a successful mid-term progress review. Aalto University follows the salary system of Finnish universities. The starting salary of the selected doctoral candidate in this project is approximately 2700 EUR/month (gross), and it increases as you progress in your research and studies. The contract includes Aalto University occupational healthcare. We value work-life balance and the well-being of all team members.

In addition, Aalto University offers a vast array of professional development opportunities, which means you will grow and learn, having the chance to participate actively in staff trainings and development projects based on your interests and needs.

We work in a hybrid way, and the primary workplace is Otaniemi, Espoo. The Otaniemi campus is a thriving and connected community of 100 nationalities, 13,000 students and 4,500 employees. Life at the transformed campus is vibrant and filled with amazing architecture, calming nature, and a variety of cafes, restaurants, services and good connections along the recently opened metro line.

Join us!

To apply, please submit the following application materials in English as a single PDF file through our recruitment site ("Apply now!”). * Letter of motivation (clearly describe how you fulfill the above-listed requirements) * CV * Degree certificates and academic transcripts * Contact details of at least two referees

The deadline for applications is 14.09.2024. The position will be filled as soon as a suitable candidate is identified. For additional information, kindly contact Dr. Shruti Dogra (shruti.dogra(at)aalto.fi). Aalto University reserves the right for justified reasons to leave the position open, to extend the application period, reopen the application process, and to consider candidates who have not submitted applications during the application period.

We will go through applications, and we may invite suitable candidates to interview already during the application period. You will hear from us the latest in the fourth week of September. We aim to have a transparent and equal recruitment process, so feel free to ask us for feedback.

Please note: Aalto University’s employees should apply for the position via our internal HR system Workday (Internal Jobs) by using their existing Workday user account (not via the external webpage for open positions). Aalto University’s students and visitors should apply as external candidates with personal (not aalto) email.

Want to know more about us and your future colleagues? You can watch these videos:

Doctoral Researcher to study coherent interaction-free measurements using Superconducting Qubits and Circuit QED

Aalto University

[url=https://www.youtube.com/watch?v=5k_0g_6zUJQ]Aalto University - Towards a better world, [url=https://www.youtube.com/watch?v=dUfEGVM-ZP8&feature=youtu.be]Aalto People , and [url=https://www.youtube.com/watch?v=ZK6pDWm1_CE]Shaping a Sustainable Future. Read more about working at Aalto: [url=https://www.aalto.fi/en/careers-at-aalto]https://www.aalto.fi/en/careers-at-aalto

Check out our new virtual campus experience: [url=https://virtualtour.aalto.fi/]https://virtualtour.aalto.fi/

About Finland

Finland is a great place for living with or without family - it is a safe, politically stable and well-organized Nordic society. Finland is consistently ranked high in quality of life and was just listed again as the happiest country in the world: [url=https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/]https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/. For more information about living in Finland: [url=https://www.aalto.fi/en/careers-at-aalto/for-international-staff]https://www.aalto.fi/en/careers-at-aalto/for-international-staff .

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

Finland