Doctoral Researcher positions in Computational Physics
Aalto University

Job Title	Doctoral Researcher positions in Computational Physics
Department	T304 Dept. Applied Physics
Institution	Aalto University , , Finland
Date Posted	Aug. 6, 2025
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-positions-in-Computational-Physics_R43802
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 120 nationalities, 14 000 students, 400 professors and close to 5000 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 industrial applications that hold great technological potential. Our research focuses on Materials physics, Quantum technology, Soft & living matter, and Advanced energy solutions. Topics extend

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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 at Aalto University invites applications to

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The positions are hosted in the [url=http://www.aalto.fi/physics-sin]Surfaces and Interfaces at the Nanoscale (SIN) group at Aalto, led by Prof. Adam Foster. We are looking for PhD researchers to work on three projects within the group, each led by a newly appointed Research Fellow.

Project 1: Autonomous, interpretable and precise nanofabrication in scanning probe microscopy * Academy Research Fellow: Nian Wu ([url=http://scholar.google.com/citations?hl=en&user=t1ra-s8AAAAJ]Google Scholar) * Research mobility: University of Cambridge (UK), Universidad Autonoma de Madrid (Spain), Peking University (China), National University of Singapore (Singapore), National Institute for Materials Science (Japan). * Brief introduction: The goal of this project is to develop autonomous and interpretable approaches capable of precisely steering chemical reactions and assembling functional nanomaterials from bottom-up in scanning tunnelling microscopy (STM). The project is tightly linked to machine learning algorithms in images (image classifier, image segmentation) or machine learning interatomic potentials (MLIPs), or reinforcement learning algorithms in decision-making. Experience in SPM experiments is a bonus, but not essential.

Project 2: Structural machine learning for high resolution tip-enhanced Raman spectroscopy * Academy Research Fellow: Orlando José Silveira ([url=https://scholar.google.com.br/citations?user=Xvvt2U8AAAAJ&hl=pt-BR&oi=ao]Google Scholar) * Research Mobility: Max Plank Institute for the structure and dynamics of matter (Germany) * Brief Introduction: We are looking for a motivated PhD student to join our team at Aalto University to develop new methods for molecular imaging at atomic resolution. The project focuses on combining Tip-Enhanced Raman Spectroscopy (TERS) with artificial intelligence to enable automated structure discovery of organic molecules. By training machine learning models on datasets generated from density functional theory simulations, we aim to interpret complex TERS images and push the limits of nanoscale optical imaging. The student will develop and implement new theoretical methodologies and apply machine learning to analyse and interpret TERS images.

Project 3: Designer magnetic molecular systems on 2D van der Waals layers * Academy Research Fellow: Nan Cao

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([url=https://scholar.google.com/citations?user=Fy7gTbYAAAAJ&hl=en]Google Scholar) * Research Mobility: Donostia International Physics Center (Donostia-San Sebastián, Spain), IBS Center for Quantum Nanoscience (Seoul, Korea), Max Planck Institute for Chemical Physics of Solids (Dresden, Germany). * Brief Introduction: The project explores low-dimensional molecular magnetic systems using an integrated approach, including theory (first-principles simulations, model Hamiltonians), data-driven methods and experiments (on-surface synthesis). It aims to design ?-conjugated molecular spin systems with exotic electronic and magnetic properties and accelerate quantum material discovery using machine learning. Candidates with machine learning expertise are especially encouraged to apply, as data-driven methods will play an increasingly important role in the project. Experience in quantum magnetism is also highly valued.

Requirements

Successful candidates have a master’s degree in Physics, Chemistry, Computer Science or related disciplines. Knowledge of machine learning (image, graph network, reinforcement learning) in that context would be considered a major asset. The candidate must have a high motivation for research, show evidence of good written and oral communication skills in English, and enjoy working in an international and cross-disciplinary team. Finnish language is not required.

What we offer

The positions are available immediately. PhDs in Finland last approximately 4 years. The fixed term contract is initially for 2 years with a possible 2-year extension after passing the midterm review. The annual workload of research and teaching staff at Aalto University is 1612 hours. Aalto University follows the salary system of Finnish universities. The starting salary for Doctoral Researchers is approximately 2815 € per month (gross), and it increases as you progress in your research and studies. The contract includes Aalto University occupational healthcare. Moreover, Finland has a comprehensive social security system.

We are an internationally oriented community and home to world-class research and teaching. The Applied Physics department is known for long-term, high-quality and innovative research carried out in cooperation with the world's leading research groups. We offer many benefits, like flexible working times, a wide range of staff training opportunities and the possibility for partial remote working. We are located in the Otaniemi campus of Aalto University in Helsinki, with a metro station and a shopping centre in our campus area.

How to apply?

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The call is open and the position can be filled as soon as a proper candidate is found. The deadline for the first round of applications is?30th September 2025. Applications should consist of a scientific CV including a brief cover letter, publication list, a transcript of studies and the names of two referees. To apply for the position, please submit your application including the attachments mentioned above as one single PDF document in English through our online recruitment system by using the link on Aalto University’s web page (click the "Apply Now” button).

For additional information about the position, kindly contact Adam Foster (firstname.lastname (at) aalto.fi).

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). If you are a student or visitor at Aalto University, please apply with your personal email address (not aalto.fi) via [url=https://www.aalto.fi/en/careers-at-aalto]Aalto University open positions.

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

[url=https://www.youtube.com/watch?v=i8zawpNMVG8]This is Aalto University!
[url=https://www.youtube.com/watch?v=5k_og_6zUJQ]Aalto University - Towards a better world
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]Careers at Aalto | Aalto University

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

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 listed again as the happiest country in the world: [url=https://worldhappiness.report/news/world-happiness-report-2025-people-are-much-kinder-than-we-expect-research-shows/]World Happiness Report 2025

For more information about living in Finland: [url=https://www.aalto.fi/en/careers-at-aalto/for-international-staff]Aalto Careers for International Staff.

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Contact Information

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

Contact

Finland