

Doctoral Researcher in Theoretical Quantum Materials Aalto University

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Posted Jun. 27, 2025, set to expire Dec. 31, 2025

Job Title Doctoral Researcher in Theoretical Quantum Materials
Department T304 Dept. Applied Physics
Institution Aalto University
, , Finland

Date Posted Jun. 27, 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-in-Theoretical-Quantum-Materials_R43667

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 from fundamental research to important applications. We educate future generations of research and

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development professionals, data specialists, technology experts, inventors, and scientists for industry and society.

We are now looking for a

Doctoral Researcher in Theoretical Quantum Materials

We invite applications for a PhD position in theory of quantum materials at Aalto University, Department of Applied Physics. The position is part of the FUN-VAN Research Council of Finland Research Fellow (RCF) project led by Dr. Adolfo O. Fumega. The PhD researcher will work on functional quantum materials based on multiferroic heterostructures, with a focus on multiferroic superconductors.

Project Description

Multiferroic materials exhibiting coexisting electric and magnetic orders and a strong magnetoelectric coupling, are at the frontier of condensed matter physics due to their potential for electrical control of quantum phenomena. The ultimate goal of this PhD project is to design of functional multiferroic superconductors by combining superconducting, magnetic, and ferroelectric materials in van der Waals heterostructures, enabling control of superconductivity via external electric fields. To achieve this, the PhD researcher will combine first-principles calculations and effective models. This theoretical project will facilitate close collaboration with experimental groups and enable benchmarking of theoretical predictions. The PhD researcher will be part of the Correlated Quantum Materials (CQM) group led by Prof. Jose Lado and work under the supervision of RCF Fellow Dr. Adolfo O. Fumega.

Requirements

We seek a highly motivated student with: * A Master's degree in physics, chemistry or a closely related field. * A strong background in quantum mechanics, solid-state physics, and computational modeling. * Previous experience with density functional theory or many-body physics (beneficial but not mandatory). * A strong interest in materials simulation, quantum materials, and condensed matter physics. * Experience with Python. * Fluency in English is required. Finnish language is not required.

What we offer * Full-time, 4-year PhD funding through the Academy of Finland. The fixed term contract is initially for 2 years with a possible 2-year extension after passing the midterm review. * Access to world-class computational resources (Aalto Triton and Lumi) and collaborative research environment at Aalto University. * Opportunities to collaborate with leading international groups (both theoretical and experimental groups). * Travel funding for international conferences and workshops. * A research visit to an international research group as part of the PhD project.

Join us!

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Please submit your application including the attachments mentioned below 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" button). * Motivation letter (1 page), * CV, * Copies of academic transcripts and degree certificates, * Contact details of at least one academic referee.

Deadline: July 31st, 2025

Starting Date: October 2025 (negotiable)

For informal inquiries, please contact RCF Fellow Dr. Adolfo O. Fumega
(<mailto:adolfo.oterofumega@aalto.fi>).

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

[<https://www.youtube.com/watch?v=i8zawpNMVG8>]This is Aalto University!

[https://www.youtube.com/watch?v=5k_og_6zUJQ]Aalto University - Towards a better world
and [https://www.youtube.com/watch?v=ZK6pDWm1_CE]Shaping a Sustainable Future.

Read more about working at Aalto: [<https://www.aalto.fi/en/careers-at-aalto>]

Check out our new virtual campus experience: [<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 listed again as the happiest country in the world: [<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: [<https://www.aalto.fi/en/careers-at-aalto-for-international-staff>]Aalto Careers for International Staff.

Contact Information

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

Contact

Finland

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