

Doctoral Researcher for Experiments in Swarming
Dynamics of Living Swimmers
Aalto University

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Posted Jun. 18, 2025, set to expire Dec. 31, 2025

Job Title Doctoral Researcher for Experiments in Swarming
Dynamics of Living Swimmers
Department T304 Dept. Applied Physics
Institution Aalto University
, , Finland

Date Posted Jun. 18, 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-for-Experiments-in-Swarming-Dynamics-of-Living-Swimmers_R43579-1

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 is now looking for a

Doctoral Researcher for experiments in swarming dynamics of living swimmers

A 4-year Doctoral Researcher position is available in the Living, Fluid, & Soft Matter group of Prof. Matilda Backholm at the Department of Applied Physics at Aalto University. The position is fully funded by the ERC project SWARM. Our research focuses on developing new cutting-edge techniques to probe the forces and flow in small living systems, such as microswimmers, plant roots, and immune cells. Our research is interdisciplinary and curiosity-driven, and we work in an inclusive and collaborative manner.

Your role and goals

You would perform technically challenging swimming force experiments with tiny living organisms using a micropipette force sensor (see Backholm et al., Nature Protocols 2019 [[url=https://doi.org/10.1038/s41596-018-0110-x](https://doi.org/10.1038/s41596-018-0110-x)]<https://doi.org/10.1038/s41596-018-0110-x> and Lara et al., arXiv:2503.21396 [[url=https://doi.org/10.48550/arXiv.2503.21396](https://doi.org/10.48550/arXiv.2503.21396)]<https://doi.org/10.48550/arXiv.2503.21396>). Your first project would be to investigate the effect of nearby swimmers on the swimming dynamics of brine shrimps. In parallel with your experimental work, you would develop theoretical models in collaboration with our international collaborators. You would also develop advanced image analysis schemes to analyse your experimental data. You would be expected to take charge of your own research project, conduct your work with high scientific quality, and actively communicate your problems, mistakes, and scientific findings to the rest of the team. We help each other to succeed in making exciting new scientific discoveries. You would be expected to complete a PhD thesis within four years.

Your network and team

As the PI of the group, I (Prof. Backholm) would be your main supervisor. Together we would design your work so that it fits your background and interests and provides the best springboard for your future career. A postdoc in the group would become your scientific advisor. The group currently consists of five postdocs, four doctoral researchers, and several undergraduate researchers. We work together and support each other.

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Your experience and ambitions

It is important that you can work both independently as well as in a team. You should have a strong internal motivation for pursuing a PhD degree. The working language of the group is English, and we expect all our team members to have very strong written and oral English skills to ensure efficient communication and collaboration. Finnish language is not required.

Other requirements: * MSc degree in Physics and excellent student track records. See [\[url=https://www.aalto.fi/en/study-options/aalto-doctoral-programme-in-science-0\]](https://www.aalto.fi/en/study-options/aalto-doctoral-programme-in-science-0)Aalto Doctoral Programme in Science | Aalto University for more details on the evaluation criteria. * A keen interest to work in the lab, learn how to build your own instruments, perform your own experiments, and analyse your results. * Experience with MATLAB. * Courses in fluid dynamics, biological physics, and/or soft matter physics. * Capacity to work in an inclusive and respectful manner.

What we offer

We offer an interdisciplinary and dynamic working environment with a strong focus on curiosity-driven fundamental research. You will be trained to perform advanced experimental research and to develop theoretical models. You will be encouraged to build your own scientific reputation by networking with our national and international collaborators and by participating in conferences to present your results. This position will also give you more general skill sets, such as critical thinking and problem solving. You will learn to communicate complicated topics in a clear and intriguing manner. The core values of the group are inclusion, equality, and collaboration. We value work-life balance and the wellbeing of all team members. Please see [\[url=https://www.aalto.fi/en/living-matter\]](https://www.aalto.fi/en/living-matter)Living, Fluid, & Soft Matter | Aalto University for more details about the group and Prof. Backholm.

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.

Our vast array of professional development opportunities means you will grow and learn, having the chance to participate actively in staff trainings and development projects based on your interests and needs. There is great freedom in your role, and we have a flexible modern working culture. We work in a hybrid way, and the primary workplace is Otaniemi, Espoo. The Otaniemi campus is a thriving and connected community of 120 nationalities, 14 000 students and 5 000 employees. Life at the transformed campus is vibrant and filled with amazing architecture, calming nature, and a variety of

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cafes, restaurants, services and good connections along the recently opened metro line.

Join us!

To apply, please submit your application including the attachments mentioned below as one single PDF document in English through our online recruitment system (click "Apply Now!" on our website).

- (1) Letter of motivation (clearly describe how you fulfil the above listed requirements)
- (2) CV
- (3) Degree certificates and academic transcripts
- (4) Contact details of at least two referees (or letters of recommendation, if already available)

The deadline for applications is 3.8.2025. The position will be filled as soon as a suitable candidate is identified. For additional information, kindly contact Prof. Matilda Backholm (matilda.backholm@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 at the latest in the third week of August. 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:

[url=https://www.youtube.com/watch?v=5k_og_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>]Careers at Aalto | Aalto University

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

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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/](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](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