

Doctoral Researcher positions in the field of ice  
mechanics and model-scale testing  
Aalto University

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Posted Feb. 13, 2024, set to expire Dec. 30, 2024

**Job Title** Doctoral Researcher positions in the field of ice  
mechanics and model-scale testing  
**Department** T212 Mechanical Engineering  
**Institution** Aalto University  
, , Finland

**Date Posted** Feb. 13, 2024

**Application Deadline** Open until filled  
**Position Start Date** Available immediately

**Job Categories** Graduate Student

**Academic Field(s)** Mechanical Engineering

**Job Website** [https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Doctoral-Researcher-positions-in-the-field-of-ice-mechanics-and-model-scale-testing\\_R38698](https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Doctoral-Researcher-positions-in-the-field-of-ice-mechanics-and-model-scale-testing_R38698)

**Apply By Email**

**Job Description**

Aalto University is a community of bold thinkers where science and art meet technology and business. We are committed to identifying and solving grand societal challenges and building an innovative future. Aalto University has been ranked the 9th best young university in the world (Top 50 under 50, QS 2018) and one of the world's top technology challenger universities (THE 2017), for its outside-the-box thinking on research collaboration, funding and innovation. Aalto has six schools with nearly 11 000 students and 4000 employees of whom close to 400 are professors. Our main campus is located in Espoo, capital area of Finland.

Doctoral Researcher positions in the field of ice mechanics and model-scale testing

Model-scale testing is the state-of-the-art method to define the ships' performance in ice, and to study

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structure and ship interactions with ice. To deepen the understanding in these topics, Marine and Arctic Technology group at the Department of Mechanical Engineering of Aalto University operates and conduct research in Aalto Ice and Wave Tank - a unique testing facility that is part of significant research infrastructure of Aalto University.

Although the level ice performance of ships can be estimated satisfactorily with current scaling method and experience of the ice tanks, the method poses several drawbacks and challenges when the scope of testing deviates from these. We are now looking for two motivated doctoral researchers to work on 1) deformation and failure of ice by using advanced beam theories and experimental mechanics, and 2) scaling methods for model-scale testing in ice. The study is a part of a project that aims to improve model-scale testing methods in ice that aim to model accurately local ice-induced loads on a ship hull and structure.

### Research topics

The research applies the state-of-the-art theories from the solid mechanics to describe the response and failure of ice. The description is utilized to describe the response of ice in laboratory conditions and to develop new scaling laws that are needed to interpret the observations between model-scale and full-scale. The doctoral students shall first deepen their understanding on beam theories to describe the response and failure of an ice beam. The knowledge is then applied to develop new scaling laws for model-scale testing and to validate the description through laboratory testing. The two doctoral theses are planned to be done in close collaboration where one focuses more on the theoretical part and one on the experimental part. Your work will be supported by Marine and Arctic Technology group which has vast experience on theoretical and experimental solid mechanics in full-scale, laboratory and model-scale testing. The project is done in collaboration with the experts from Texas A&M University (US) and Clarkson University (US). A researcher visit to these entities may be possible within this work.

### Requirements

The research focuses on theoretical and experimental solid mechanics. Thus, the applicant should have good understanding of solid mechanics, mechanics of material or experimental mechanics. A suitable background may come from mechanical engineering, civil engineering, applied and experimental mechanics, or similar field. Experience on computational and experimental mechanics, product design, and proof of manufacturing skills are considered beneficial. By the time of starting, the applicant must fulfill the requirements for entitlement to do postgraduate studies at Aalto University ([url=https://into.aalto.fi/display/endoctoraleng/How&#43;to&#43;apply]https://into.aalto.fi/display/endoctoraleng/How&#43;to&#43;apply

### Employment

The position is at the Department of Mechanical Engineering and may include some work as a teaching assistant. Aalto University follows the salary system of Finnish universities. The starting salary

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of a doctoral student is about 2700 €/month (gross), and it increases as you progress in your research and studies. Following the standard practice in the School of Engineering, the contract will be made initially for two years, then extended to another two years after a successful mid-term progress review. The total duration of doctoral studies is four years. The employment relationships are full-time. The annual workload of research and teaching staff at Aalto University is 1612 hours. The contract includes Aalto University occupational healthcare.

#### How to apply

The application material includes \* Motivation letter (maximum one page) \* CV and other proof of scientific activity (publications, conference papers etc.) \* A certified copy of master's degree certificate and official transcript of records \* An abstract or summary of the MSc thesis \* Any other supporting documents, like recommendation letter \* Proof of proficiency in Finnish, Swedish or English if the applicant is not a native speaker of them (see

[url=https://into.aalto.fi/display/endoctoraleng/Application&#43;instructions#Applicationinstructions-LanguagerequirementsLanguagerequirements]https://into.aalto.fi/display/endoctoraleng/Application&#43;instr  
LanguagerequirementsLanguagerequirements )

All material should be submitted in Finnish or English. You may apply even if you are still in the process of writing your MSc thesis. In this case, indicate it clearly in your application.

Applications with attachments (in pdf-format) are to be submitted through the link below no later than March 15, 2024 at 23.59 Finnish time (UTC &#43;2). The position will be fulfilled as soon as a suitable candidate is found.

Aalto University reserves the right for justified reasons to leave the position open, to extend the application period and reopen the application process.

Please note: Aalto University's employees and visitors should apply for the position via the internal HR system Workday (Internal Jobs à Find Jobs) by using their existing Workday user account.

#### Further information

For additional information, please contact Assistant Professor Mikko Suominen (email: [url=mailto:firstname.lastname&#64;aalto.fi]firstname.lastname&#64;aalto.fi). In questions related to the recruitment process, please contact HR Advisor Paula Thomsson-Levä [url=mailto:paula.thomsson-leva&#64;aalto.fi]paula.thomsson-leva&#64;aalto.fi .

For more information about living in Finland: [url=https://www.aalto.fi/services/about-finland]https://www.aalto.fi/services/about-finland

More about Aalto University

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**Contact**

Finland