Aalto University

Aalto University is an academic community where sciences and arts meet technology and business. We shape a sustainable future by making research breakthroughs in and across disciplines, creating novel solutions to major global challenges and sparking the game changers of tomorrow. Our community is made up of 12 000 students, 400 professors and close to 4 000 other faculty and staff working on our dynamic campus in the metropolitian area of 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. Finland is also an exciting place to live, renowned for its nature, its highly educated, family-friendly and life-work balanced society. For more information about living in Finland, please see: https://www.aalto.fi/services/about-finland.

The Fusion and Plasma Physics Group (https://www.aalto.fi/en/department-of-applied-physics/fusion-and-plasma-physics) at the Department of Applied Physics is inviting applications for a

Doctoral Candidate (PhD) in the area of edge-plasma physics in magnetic fusion devices

The group focuses on experimental and computational plasma physics in magnetically confined fusion experiments. Within this job posting the research project aims to improve understanding of the physics of the edge plasma in tokamaks by interpretative analysis of measurements in present devices using predictions from state-of-the-art computer simulations. The primary physics goal of these studies is elucidating the physics of the onset of divertor plasma detachment in magnetically confined fusion devices.

Job description

The successful candidate will be trained in edge plasma physics with the goal to complete a doctoral thesis on the impact of the main ion species (hydrogenic versus helium) on divertor plasma detachment in tokamaks within four years of the doctoral programme at Aalto University. The candidate will be educated in executing plasma edge codes, such as SOLPS-ITER and EIRENE, to interpret data from the ASDEX Upgrade and JET tokamaks. As a team member, the candidate is anticipated to participate in ASDEX Upgrade and JET experiments, in data mining and analyses of past and on-going experiments, and in carrying out plasma simulations. The candidate will be working in a team of senior and junior research members toward development and implementation of new physics models in these computational tools. The candidate is expected to document and publish research results in peer-reviewed scientific or technical journals, and to present results at external conferences, seminars and/or technical meetings. At Aalto University a doctoral dissertation includes three peer-reviewed publications within four years of the doctoral programme. While the primary location of the studies will be at the Aalto University Otaniemi campus in Espoo, the research pertaining to the thesis will be carried out in collaboration with the EUROfusion devices ASDEX Upgrade in Germany and JET in the UK, and at other European or outside-Europe fusion research facilities. The candidate is expected to spend some time at these research facilities.

Requirements

As a successful candidate for this position, you should have:

- M.Sc. degree in plasma physics or a related field by the start of the assignment
- Experience in computer programming languages, such as Fortran or C
- Experience with data analysis programming languages, such as Python or MATLAB
- Proficient verbal and written communication skills in English necessary to work in a multidisciplinary environment, to author technical and scientific reports and publications, and to deliver scientific presentations

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Skills, knowledge and abilities in the following areas are highly desirable:

- Plasma, atomic and molecular physics
- Computational physics, including large data analysis and high performance computing

The primary language of communication within the Fusion and Plasma Physics Group is English.

Duration, salary and benefits

The fixed term Doctoral Candidate contract is initially for two years, followed by an extension for another two-year period after successful completion of the midterm exam after 1-1/2 years. The total duration of the position is four years. The annual workload of research and teaching staff at Aalto University is 1612 hours.

Aalto University provides a competitive salary and benefit package, including occupational heathcare.

The primary workplace will be the Otaniemi Campus at Aalto University, and will involve international assignments to research facilities in the Germany and the UK. Longer-term assignments to these facilities may be discussed at the time of recruitment.

For more Information

For additional information, please contact the head of the research group, Professor Mathias Groth, tel. +358 50 3640 495, or for recruitment-process related questions HR-coordinator Lotta Maltolahti. E-mails: firstname.lastname@aalto.fi.

Applying

Please send your application at earliest convenience to the Aalto University recruitment system, **by June 24, 2022.** To apply for the position, please submit your application including the attachment mentioned below as one single PDF document in English through our online recruitment system by using the link on Aalto University's web page ("Apply Now"). Please note that Aalto University employees and visitors should apply for the position via the university internal system Workday.

- Letter of motivation (max. one page)
- Copy of M.Sc. degree and English version of transcript of completed M.Sc. courses
- CV (max. two pages), including references
- List of publications, if applicable

Aalto University reserves the right for justified reasons to leave the position open, to extend the application period and to consider also candidates who have not submitted applications during the application period.