

Postdoc Position in Nonlinear Reduced Order Modelling of
Large Structures
University of Southern Denmark

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Posted Oct. 28, 2025, set to expire Dec. 1, 2025

Job Title Postdoc Position in Nonlinear Reduced Order Modelling of Large Structures
Department Centre of Industrial Mechanics (CIM)
Institution University of Southern Denmark
Sønderborg, , Denmark

Date Posted Oct. 28, 2025

Application Deadline Dec. 1, 2025
Position Start Date Mar. 1, 2026

Job Categories Post-Doc

Academic Field(s) Mechanical Engineering
Engineering Mechanics
Computer Science

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Job Description

Join us in the Centre of Industrial Mechanics (CIM) and help us design, build, and operate large

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structures where nonlinearities due to large deformations or translations in prismatic joints challenge known reduced order modelling techniques. In this 2-year Postdoc position, you will work with colleagues of our Applied Mechanics team on dynamic models, simulations, and experimental validation of large structures. Our goal is a validated digital-twin of a prototype robot to remotely handle the breeding blankets of DEMO (the first grid connected fusion reactor planned for the second half of this century) that SDU is designing, building, and testing for EUROfusion. During this 2-year contract, we will apply for additional funding to hopefully extend this important long-term work for a greener future.

Your Role

- Develop and implement extensions of conventional reduced order modelling techniques for flexible bodies in a large multi-body structure.
- Design and conduct experiments to validate the developed models on relevant downscaled structures in the laboratory.
- Use the developed techniques to create reduced order models of relevant flexible bodies of the EUROfusion robot being built during 2026 in a multi-body dynamics framework.
- Collaborate with the mechanical design and robotic control teams to provide a digital-twin for load and control validation.
- Collaborate with the Large Scale Production facility (SDU-LSP) that owns and operates the EUROfusion robot on the experimental validation of the digital-twin's accuracy and its potential for load control and predictive maintenance.

The project encourages you to define further subtopics and develop independent research directions, benefiting from a supportive environment.

Your Profile

- PhD in mechanical engineering, computational science, or related field.
- Experience in at least one: finite element method, reduced order modelling, multi-body dynamics, scientific programming (preferably Python), or experimental mechanics.
- Experience with multi-body simulation software (e.g. MATLAB SimScape, or equivalent) and/or experimental design and data analysis.
- Strong teamwork, communication, and independent research skills.
- Proficiency in English (spoken and written).

Why Join SDU Sønderborg?

The Applied Mechanics team at SDU-CIM is a dynamic, recently established research group within the

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Institute of Mechanical and Electrical Engineering (IME). As part of a young and growing team and institute, you will help shaping research, education, and innovation in engineering science.

You will have access to state-of-the-art computing and lab facilities, and benefit from strong academic and industrial networks across Denmark and Europe. CIM is based at SDU's scenic Sønderborg campus in the Alston building directly at the waterfront. All study programs are taught in English, and more than two thirds of our students and staff are international, creating an inspiring environment.

SDU maintains close ties to industry in Sønderborg, Southern Denmark, and Northern Germany, offering direct exposure to real-world challenges and opportunities for cross-sectoral research collaborations. This position offers you the chance to develop your own research ideas, contribute to the growth of the group and institute, and advance your career in a supportive, international setting.

In short, you will benefit from:

- Access to state-of-the-art computing and lab facilities.
- A dynamic, international research environment in a scenic campus setting.
- Close ties to industry and opportunities for cross-sectoral collaboration.
- Support for developing your own research ideas and career.

Contact information

For more information, please contact Professor Morten Hartvig Hansen (mortenhansen@sdu.dk; phone: + 45 50727721) or Head of Center Lars Duggen (duggen@sdu.dk).

If you experience technical problems, please contact hcm-support@sdu.dk.

Application procedure

Applicants are advised to read the [SDU information on how to apply](#).

Assessment of the candidates is based on the application material, **and an application must include:**

- Cover letter
- Curriculum Vitae
- Brief research proposal (max. 1 page) outlining your intended research.
- Complete list of publications.
- Publications most relevant to the position.
- Summary and documentation of experience in teaching, if relevant to the position.

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- Master's and PhD degree certificates or equivalent (copy of original/official English translation).

References/reference letters and a statement/documentation of other qualifications may also be included.

SUBMISSION GUIDE: Cover letter and Curriculum Vitae shall be uploaded in their relevant boxes, each file max. 5 MB. All other documents shall be uploaded under 'Miscellaneous documents' (max 10 files of max 50 MB per file).

All documents must be in English and PDF format. CPR number (civil registration no.) must be crossed out. All PDF-files must be unlocked and allow binding and may not be password protected.

The application deadline is December 1, 2025, at 11.59 PM/23.59 (CET/CEST)

Assessment and selection process

Applications will be assessed by an assessment committee. Shortlisting may be applied, and only shortlisted candidates will receive a written assessment. [Read about shortlisting at SDU](#). Interviews and tests may be part of the overall evaluation.

Read about the [Assessment and selection process](#).

Conditions of employment

Appointment as a postdoc is temporary for an initial 1-year period, and the preferred start date is from March 1, 2026, or as soon as possible thereafter. Extension may be possible depending on available funding.

Employment as a postdoc requires scientific qualifications at PhD level at the time of employment. Employment will be in accordance with the collective agreement between the Ministry of Finance and the Danish Confederation of Professional Associations for academics in the state with the associated circular on the protocol for the job structure for academic staff at Danish universities and the provisions for postdoc as described herein. [Further information on salary and taxation](#). The person employed in the position may, based on a specific individual managerial evaluation, be exempted from time registration, also known as a "self-organizer".

The University of Southern Denmark wishes our staff to reflect the surrounding community and therefore encourages everyone, regardless of personal background, to apply for the position. SDU conducts research in critical technologies, which, due to the risk of unwanted knowledge transfer, are

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subject to a number of security measures. Therefore, based on information from open sources, background checks may be conducted on candidates for the position.

[Further information](#) for international applicants about entering and working in Denmark. You may also visit [WorkinDenmark](#) for additional information.

[Further information](#) about The Faculty of Engineering.

About Us

The University of Southern Denmark was established to create value for and with society. Whether our contributions come in the form of excellent research, innovative solutions, education or learning, we must make a positive difference to society and contribute to a sustainable future. We do this by cultivating talents and creating the best environments for research and learning. It is therefore crucial that SDU retains, develops and recruits talent. At the same time, we need to ensure consistently high quality in all our activities – and we can only do that with the right people. The University's researchers, lecturers, students, managers and technical/administrative staff are the foundation of our success.

[Read about SDU](#)

Contact Information

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

Contact Professor Morten Hartvig Hansen
Centre of Industrial Mechanics (CIM)
University of Southern Denmark
Sønderborg
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Contact E-mail mortenhansen@sdu.dk