

# Curriculum Vitae

## Personal data

Full name: Johan Rønby Pedersen  
Birth: December 11, 1979, Copenhagen, Denmark  
Family: Married to Herdis Gudbrandsdottir, father to Carl and Vilfred  
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## Positions

- 2021 - **Associate Professor, Department of Science and Environment, RUC**  
2020 - 2021 **Associate Professor, Department of Mathematical Sciences, AAU**  
2018 - 2020 **Assistant Professor, Department of Mathematical Sciences, AAU**  
- Half-time employment due to FloatStep project (see below).  
2017 - **Founder, STROMNING**  
- R&D, consultancy and training within fluid simulation technology  
- Partner in Grand Solution project, [FloatStep](#), funded by [IFD](#).  
2016 - 2017 **CFD Team Leader, Ports & Offshore Technology (POT), DHI**  
- R&D within CFD and managing global DHI CFD group activities  
2014 - 2016 **Sapere Aude: DFF-Research Talent Postdoc, POT, DHI**  
- Invented isoAdvect algorithm for numerical fluid interface advection  
- [Keynote lecturer](#) at the 9<sup>th</sup> OpenFOAM workshop, Zagreb, Croatia  
- [Invited talk](#) at the Gcompute User Meeting in Gothenburg, Sweden  
- 15 oral presentations at international conferences and workshops  
- Organized two [OceanFOAM workshops](#) at DTU with 30-40 participants  
- 3 weeks at "Theory of Water Waves Programme", [Cambridge](#), UK  
- 5 weeks research visits to Prof. Hrvoje Jasak at [University of Zagreb](#), HR  
2011 - 2014 **Research Scientist, POT, DHI**  
- Commercial projects involving CFD simulation of waves-structure interaction  
- R&D projects on development of simulation tools for offshore engineering  
- 1 month research visit to [DHI Singapore](#), SG  
2006 - 2007 **Research assistant, Fusion Plasma Group, Risø National Laboratory**  
- Developing kinetic theory for fast ion dynamics in Tokamak fusion plasmas  
- Experimental campaigns at TEXTOR Tokamak, [Forschungszentrum Jülich](#), DE

## Education

- 2011-03-30 **PhD in theoretical hydrodynamics, Department of Mathematics, DTU**  
- Thesis: "Chaos and Integrability in Ideal Body-Fluid Interactions"  
- 6 months visiting Prof. Darren Crowdy at [Imperial College London](#), UK  
- 2x2 weeks visiting Prof. Hassan Aref at [Virginia Tech](#), USA  
2006-09-26 **MSc in physics, Niels Bohr Institute, University of Copenhagen**  
- Thesis: "Dynamics and Thermalization of Energetic Ions in Magnetically Confined Fusion Plasmas". Supervisor: Dr. Henrik Bindslev (Risø)  
- 1 month research visit to Jan Egedal at [MIT](#), USA  
2003-01-17 **BSc in mathematics and physics, Roskilde University**  
- Mathematics bachelor project about polygonal hydraulic jumps.

## Grants

- 2019 [InterFlow: Sapere Aude DFF-Research Leader](#) (6.186.988 DKK)  
2018 [FloatStep: Grand Solution project from Innovation Fund Denmark](#) (Total: 15.887.549 DKK, STROMNING: 1.450.950 DKK)  
2013 [Sapere Aude DFF-Research Talent grant](#) (2.416.408 DKK)

## Academic honours

2018 [Best Presentation Award at the 6<sup>th</sup> OpenFOAM Conference](#)  
2011 [Euromech Young Scientist Prize](#)

## Publications

16 peer-reviewed publications (6 as main author) incl. 11 journal articles.  
Google scholar citations/H-index: 500/8.

## Scientific profile

I thrive in the intersection between applied mathematics, theoretical physics and computer science. The list below covers my research interests including current and past work:

- Numerical methods for interfacial flow simulations
- Computational and theoretical fluid dynamics with focus on pattern formation such as waves, vortices and hydraulic jumps
- Hydrodynamic loads on structures and fluid-structure interaction for floating bodies
- Soil mechanical modelling in the context of a dynamically loaded seabed beneath offshore wind turbine foundations
- Dynamical systems theory, chaos and Hamiltonian mechanics as a mathematical framework for understanding complex physical systems
- Fusion plasma physics, in particular kinetic and statistical modelling of fast ions in Tokamaks

## Management and organisational experience

- Member of Editorial Board of the OpenFOAM Journal since 2020.
- Member of OpenFOAM® Marine Applications Technical Committee from Oct 2019.
- Main organizer of [DANSIS OpenFOAM seminar 2019](#) (~100 participants).
- In Steering Committee of Innovation Fund Denmark Grand Solution project FloatStep
- CFD Team Leader managing DHI's global CFD group activities
- PI of research project "[Breaking the Code of Breaking Waves](#)" at DHI during 2014-2016
- Project manager of several research and commercial CFD projects at DHI
- Organizer of [OceanFOAM 2015](#) and [OceanFOAM 2016](#) workshops at DTU
- Passed DHI's 1-week project management course
- Student member of PhD school council at DTU Mathematics during 2008-2010
- Assisted organizing IUTAM Symposium "[150 Years of Vortex Dynamics](#)" at DTU in 2008
- Cofounder of the student organisation Det Grønne Forum at RUC, 1999-2001
- Student member of Study Board at Nat-Bas, RUC 1999-2001

## Teaching and dissemination

- Currently supervising two PhD students and a postdoc in the InterFlow project.
- Preparing 1-week PhD/industry course in Open Source Computational Fluid Dynamics to be held in June 2021 at AAU CPH (collaboration with Dept. of Energy Technology)
- Passed AAU's course in PhD supervision in 2020
- Passed AAU's adjunktpædagogikum in 2020
- Teaching math part of Models, Mechanics & Materials at Sustainable Design, AAU, 2019-20
- Linear Algebra teacher at AAU CPH in fall 2018
- "Multiphase flows with OpenFOAM" 1-day training course at IFPEN, Lyon, FR in 2018.
- Co-supervision of PhD Tian Tang (DTU Civil), MSc Dennis Arreborg (DTU Civil), MSc Karl-Søren Geertsen (DTU Aqua)
- Class teacher in Mathematics 1 (linear algebra and calculus) at DTU in 2008-2009
- Passed DTU's Teaching & Learning course
- Guide at Risø Visiting Center performing and developing shows for school classes and general public, 2002-2004.
- Many contributions to the Danish Science Festival about fusion energy, boomerang dynamics and polygonal hydraulic jumps