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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Education

2011-03-30 **PhD in theoretical hydrodynamics, Department of Mathematics, DTU**
- Thesis: "Chaos and Integrability in Ideal Body-Fluid Interactions"
- Supervisors: Profs. Morten Brøns and Hassan Aref
- 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.

Positions

2017 – **Founder of STROMNING**
- R&D and consultancy within fluid simulation technology

2016 – 2017 **CFD Team Leader, Dept. of Ports & Offshore Technology, DHI**
- R&D within CFD and managing global DHI CFD group activities

2014 – 2016 **DFF-Sapere Aude postdoc, Dept. of Ports & Offshore Technology, DHI**
- Invented isoAdvector algorithm for numerical fluid interface advection
- Keynote lecturer at the 9th OpenFOAM workshop, Zagreb, Croatia
- Invited talk at the Gompute 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, Dept. of Ports & Offshore Technology, 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

Parental leave

4-25 November 2011, 1 July – 30 September 2012, 25 February – 31 May 2014 (21 weeks)

Academic awards and honours

2011 Euromech Young Scientist Prize
2013 Sapere Aude DFF-Research Talent grant

Management and organisational experience

- CFD Team Leader organising 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
- Member of high school student council at Gladsaxe Gymnasium in 1995-1998

Scientific interests

I regard myself as a mixture of an applied mathematician, a theoretical physicist and a computer scientist. 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

Teaching and dissemination

- 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 jump

International collaborators

- Prof. Hrvoje Jasak, University of Zagreb, HR
- Prof. Darren Crowdy, Imperial College London, UK
- Prof. Mark Stremler, Virginia Tech, USA
- Henning Scheufler, German Aerospace Center (DLR), Bremen, DE
- Assistant Professor Ville Vuorinen, Aalto University, FIN
- Dr. Andrew Heather, ESI group, UK
- Dr. Lionel Gamet, IFP Energies nouvelles, FR