

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 **Ph.D. in theoretical hydrodynamics, Department of Mathematics, DTU**
Thesis: "Chaos and Integrability in Ideal Body-Fluid Interactions"
Supervisors: Profs. [Morten Brøns](#) and [Hassan Aref](#)
Six months research visit at Prof. [Darren Crowdy](#), Imperial College London
- 2006-09-26 **M.Sc. 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).
One month research visit to Prof. [Jan Egedal](#) at MIT, Boston, USA.
- 2003-01-17 **B.Sc. in mathematics and physics, Roskilde University**
Mathematics bachelor project about polygonal hydraulic jumps.

Positions

- 2016 – present **CFD Team Leader & Research Scientist, Ports & Offshore Technology, DHI**
- 2014 – 2016 **Saper Aude postdoc, Ports & Offshore Technology, DHI**
- 2011 – 2014 **Research Scientist, Ports & Offshore Technology, DHI**
- 2006 – 2007: **Research Assistant, Fusion Plasma Group, Risø National Laboratory**

Teaching and dissemination

- Co-supervision **PhD Tian Tang, MSc Dennis Arreborg and MSc Karl-Søren Geertsen**
Spring 08 & 09 **Instructor in Mathematics 1 for engineering students**
Teaching DTU freshmen introductory linear algebra and calculus.
- 2002 – 2004: **Student job as guide at Risø Visiting Center**
Developing and performing shows to school classes and the general public about the energy and materials technology research at Risø.
- 2002 – 2008: **Several contributions to the Danish Science Festival**
Presentations on fusion energy, boomerang dynamics workshops, demonstration of the polygonal hydraulic jump to the general public.

Academic awards

- 2011 [Euromech Young Scientist Prize](#)
- 2013 [Saper Aude DFF-Research Talent grant](#)

Publication list – Johan Rønby Pedersen

Peer-reviewed publications

- [11] Larsen, B. E., Fuhrman D. R., **Roenby, J.**, 2017, "Performance of interFoam on the simulation of progressive waves", Coastal Engineering (submitted)
- [10] **Roenby, J.**, Bredmose, H., and Jasak, H., 2017, "IsoAdvector: Geometric VOF on general meshes", 11th OpenFOAM Workshop (book chapter, accepted).
- [9] Jensen, B., Liu, X. , Christensen, E. D. and **Roenby, J.**, 2017, "Porous media and immersed boundary hybrid-modelling for simulating flow in stone cover-layers", Proceedings of Coastal Dynamics 2017, 1312-1323
- [8] **Roenby, J.**, Larsen, B. E., Bredmose, H., and Jasak, H., 2017, "A new volume-of-fluid method in OpenFOAM", Proceedings of the 7th International Conference on Computational Methods in Marine Engineering, 266-277
- [7] **Roenby, J.**, Bredmose, H., and Jasak, H., 2016, "A Computational Method for Sharp Interface Advection", Royal Society Open Science 3, 160405
- [6] Crowdy, D. & **Roenby J.**, 2014, "Hollow vortices, water waves and double quadrature domains", Fluid Dynamics Research 46, 031424 (12pp)
- [5] **Roenby, J.** & Aref, H., 2011, "Chaotic dynamics of a body-vortex pair", Journal of Fluids and Structures 27, 768–773
- [4] Aref, H., **Roenby, J.**, Stremler, M.A., Tophøj, L., 2011, "Nonlinear excursions of particles in ideal 2D flows", Physica D 240, 199–207
- [3] **Roenby, J.** & Aref, H., 2010, "On the atmosphere of a moving body", Physics of Fluids 22, 057103
- [2] **Roenby, J.** & Aref, H., 2010, "Chaos in body-vortex interactions", Proceedings of the Royal Society A 466, 1871-1891
- [1] Salewski et al., 2009, "Comparison of collective Thomson scattering signals due to fast ions in ITER scenarios with fusion and auxiliary heating", Plasma Physics and Controlled Nuclear Fusion 51, 035006

Non-peer reviewed publications

- [8] **Roenby, J.**, Bredmose, H., and Jasak, H., 2016, "IsoAdvector: a New Geometric VOF Method for Arbitrary Meshes", 11th OpenFOAM Workshop.
- [7] **Roenby, J.**, Bredmose, H., and Jasak, H., 2016, "isoAdvector: A VOF algorithm for solving the sharp interface advection problem on arbitrary meshes", International Conference on Multiphase Flows.
- [6] **Roenby, J.**, Bredmose, H., and Jasak, H., 2016, "IsoAdvector: Free, fast and accurate VOF on arbitrary meshes", 4th OpenFOAM User Conference.
- [5] Tang, T., **Roenby, J.** and Hededal, O., 2012, "A coupled soil-pore fluid formulation for modeling soil liquefaction and cyclic mobility in seabed using the finite volume method", The 2012 International Conference on Advances in Coupled Systems Mechanics, Seoul

- [4] **Roenby, J.**, 2011, EUROMECH Young Scientist Prize Paper, "Chaos in Idealized Body-Fluid Interactions", Euromech Newsletter 40
- [3] **Roenby, J.**, 2011, "Chaos and Integrability in Ideal Body-Fluid Interactions", PhD thesis available at www.roenby.com/phd.pdf (18 MB)
- [2] **Roenby, J.**, 2006, "Dynamics and Thermalization of Energetic Ions in Magnetically Confined Fusion Plasmas", master thesis available at www.roenby.com/Master.pdf.
- [1] Hansen, K.S. et al., 2002, "Polygonformedede hydrauliske spring", bachelor project (in Danish) available at www.roenby.com/DHS.pdf.

Public media

"DHI scientist develops new water surface simulation algorithm", International Association for Hydro-Environment Engineering and Research (IAHR) World newsflash about isoAdvector.

"Computational Fluid Dynamics - Our virtual water world", Youtube "Tech Talk" on CFD at DHI.

"A real human being". Memorial to my dear PhD supervisor Hassan Aref.

"Chaos in body-vortex interactions", Popular article about PhD in "DTU in Profile 2011", p. 40.

"Kaos I bevægelse". Popular article about PhD on videnskab.dk and in "DTU Avisen".

"Researchers move closer to understanding chaotic motion of a solid body in a fluid", Popular article about PhD work on sciencedaily.com.