Publications:

**Finite volume method room acoustic simulations integrated into the architectural design process**
Publication: Research › peer-review › Conference abstract in journal – Annual report year: 2017

**Multilevel techniques for Reservoir Simulation**
Publication: Research › Ph.D. thesis – Annual report year: 2017

**Numerical Multilevel Upscaling for Incompressible Flow in Reservoir Simulation: An Element-based Algebraic Multigrid (AMGe) Approach**
Publication: Research › peer-review › Journal article – Annual report year: 2017

**A robust WENO scheme for nonlinear waves in a moving reference frame**
Publication: Research › peer-review › Journal article – Annual report year: 2016

**A stabilised nodal spectral element method for fully nonlinear water waves**
Publication: Research › peer-review › Journal article – Annual report year: 2016

**DeRisk - Accurate prediction of ULS wave loads. Outlook and first results**
Publication: Research › peer-review › Conference article – Annual report year: 2016

**Development of a numerical modelling tool for combined near field and far field wave transformations using a coupling of potential flow solvers**
Publication: Research › peer-review › Article in proceedings – Annual report year: 2016

**Efficient uncertainty quantification of a fully nonlinear and dispersive water wave model with random inputs**
Publication: Research › peer-review › Journal article – Annual report year: 2016

**Nonlinear Multigrid for Reservoir Simulation**
Publication: Research › peer-review › Journal article – Annual report year: 2015

**Nonlinear Multigrid solver exploiting AMGe Coarse Spaces with Approximation Properties**
Publication: Research › peer-review › Conference abstract for conference – Annual report year: 2016

**On nonlinear wave-structure interaction using an immersed boundary method in 2D**
Publication: Research › peer-review › Conference abstract in proceedings – Annual report year: 2016
Robust Numerical Methods for Nonlinear Wave-Structure Interaction in a Moving Frame of Reference
Publication: Research › Ph.D. thesis – Annual report year: 2016

Spectral Tensor-Train Decomposition
Publication: Research › peer-review › Journal article – Annual report year: 2016

Unstructured Spectral Element Model for Dispersive and Nonlinear Wave Propagation
Publication: Research › peer-review › Article in proceedings – Annual report year: 2016

Adaptive spectral tensor-strain decomposition for the construction of surrogate models
Publication: Research › peer-review › Poster – Annual report year: 2015

A Spectral Element Method for Nonlinear and Dispersive Water Waves
Publication: Research › peer-review › Poster – Annual report year: 2015

Computational Hydrodynamics: How Portable and Scalable Are Heterogeneous Programming Paradigms?
Publication: Research › peer-review › Poster – Annual report year: 2015

On Devising Boussinesq-type Equations with Bounded Eigenspectra: Two Horizontal Dimensions
Publication: Research › peer-review › Article in proceedings – Annual report year: 2015

Spectral element modelling of floating bodies in a Boussinesq framework
Publication: Research › Conference abstract for conference – Annual report year: 2015

Uncertainty Quantification with Applications to Engineering Problems
Publication: Research › Ph.D. thesis – Annual report year: 2015

Analysis of efficient preconditioned defect correction methods for nonlinear water waves
Publication: Research › peer-review › Journal article – Annual report year: 2014

A non-linear wave decomposition model for efficient wave–structure Interaction. Part A: Formulation, validations and analysis
Publication: Research › peer-review › Journal article – Annual report year: 2014

On devising Boussinesq-type models with bounded eigenspectra: One horizontal dimension
Publication: Research › peer-review › Journal article – Annual report year: 2014

On the numerical and computational aspects of non-smoothnesses that occur in railway vehicle dynamics
Publication: Research › peer-review › Journal article – Annual report year: 2012

Sensitivity Analysis of the Critical Speed in Railway Vehicle Dynamics
Publication: Research › peer-review › Conference article – Annual report year: 2014

Spectral Tensor-Train Decomposition for low-rank surrogate models
Publication: Research › Poster – Annual report year: 2014

Stable finite difference discretizations of the forward speed seakeeping problem
Publication: Research › peer-review › Conference abstract in proceedings – Annual report year: 2015
A generic library for large scale solution of PDEs on modern heterogeneous architectures  
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2012

A GPU-based High-Performance Library with Application to Nonlinear Water Waves  
Publication: Research - peer-review › Sound/Visual production (digital) – Annual report year: 2012

A High-Order WENO Finite Difference Water Wave Model for Interactive Ship-Wave Simulation  
Publication: Research - peer-review › Paper – Annual report year: 2012

An ALE Weighted Least Squares Method for Simulation of Violent Water Wave Impact  
Publication: Research - peer-review › Paper – Annual report year: 2012

Comparison of Classical and Modern Uncertainty Qualification Methods for the Calculation of Critical Speeds in Railway Vehicle Dynamics  
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

Efficient Pseudo-Spectral Model for Free Surface Nonlinear Water Waves  
Publication: Research - peer-review › Paper – Annual report year: 2012

Efficient pseudo-spectral model for nonlinear water waves  
Publication: Research › Article in proceedings – Annual report year: 2012

High-order Finite Difference Solution of Euler Equations for Nonlinear Water Waves  
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

Nonlinear Multigrid for Reservoir Simulation  
Publication: Research › Poster – Annual report year: 2012

Parallel Programming using OpenCL on Modern Architectures  
Publication: Research › Report – Annual report year: 2012

Towards Real Time Simulation of Ship-Ship Interaction  
Publication: Research › Article in proceedings – Annual report year: 2012

Uncertainty Quantification on High-speed Railway Dynamics  
Publication: Research - peer-review › Poster – Annual report year: 2012

A Fast GPU-accelerated Mixed-precision Strategy for Fully Nonlinear Water Wave Computations  
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

A Fast Mixed-Precision Strategy for Iterative Gpu-Based Solution of the Laplace Equation  
Publication: Research › Sound/Visual production (digital) – Annual report year: 2011

A massively parallel GPU-accelerated model for analysis of fully nonlinear free surface waves  
Publication: Research - peer-review › Journal article – Annual report year: 2011

Development of a new massively parallel tool for nonlinear free surface wave simulation  
Publication: Research › Poster – Annual report year: 2011
<table>
<thead>
<tr>
<th>Title</th>
<th>Publication Type</th>
<th>Annual report year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast high-performance modeling tools for many-core architectures</td>
<td>Research › Poster</td>
<td>2011</td>
</tr>
<tr>
<td>Improved Software Implementation of DES Using CUDA and OpenCL</td>
<td>Research › Article in proceedings</td>
<td>2011</td>
</tr>
<tr>
<td>Introduction to GPU Programming</td>
<td>Research › Sound/Visual production (digital)</td>
<td>2011</td>
</tr>
<tr>
<td>On a fast GPU-accelerated massively parallel method for fully nonlinear water wave computations</td>
<td>Research › Article in proceedings</td>
<td>2011</td>
</tr>
<tr>
<td>Towards fast real-time analysis of large wave problems on desktop architectures</td>
<td>Research › Sound/Visual production (digital)</td>
<td>2011</td>
</tr>
<tr>
<td>Very fast simulation of nonlinear water waves in very large numerical wave tanks on affordable graphics cards</td>
<td>Research › Sound/Visual production (digital)</td>
<td>2011</td>
</tr>
<tr>
<td>An Efficient GPU-Accelerated Model for Fully Nonlinear Water Waves</td>
<td>Research › Sound/Visual production (digital)</td>
<td>2010</td>
</tr>
<tr>
<td>Development of an efficient GPU-accelerated model for fully nonlinear water waves</td>
<td>Research › Conference abstract for conference</td>
<td>2010</td>
</tr>
<tr>
<td>Development of an Efficient GPU-Accelerated Model for Fully Nonlinear Water Waves</td>
<td>Research › Sound/Visual production (digital)</td>
<td>2010</td>
</tr>
<tr>
<td>Development of Desktop Computing Applications and Engineering Tools on GPUs</td>
<td>Research › Poster</td>
<td>2010</td>
</tr>
<tr>
<td>High-order finite difference solution for 3D nonlinear wave-structure interaction</td>
<td>Research › Journal article</td>
<td>2010</td>
</tr>
<tr>
<td>Meshfree simulation of free surface flow and fluid-structure interaction</td>
<td>Research › Article in proceedings</td>
<td>2010</td>
</tr>
<tr>
<td>Multi-block, boundary-fitted solutions for 3D nonlinear wave-structure interaction</td>
<td>Research › Article in proceedings</td>
<td>2010</td>
</tr>
<tr>
<td>Numerical Solution of Ordinary Differential Equations: - Analysis and Applications</td>
<td>Education › Compendium/lecture notes</td>
<td>2010</td>
</tr>
<tr>
<td>A boundary-fitted finite difference solution for nonlinear wave-structure interaction</td>
<td>Research › Conference abstract in proceedings</td>
<td>2009</td>
</tr>
<tr>
<td>An efficient flexible-order model for 3D nonlinear water waves</td>
<td>Research › Journal article</td>
<td>2009</td>
</tr>
<tr>
<td>Boundary-fitted solutions for 3D nonlinear water wave-structure interaction</td>
<td>Research › Article in proceedings</td>
<td>2009</td>
</tr>
</tbody>
</table>
The Spectral/hp-Finite Element Method for Partial Differential Equations
Publication: Education › Compendium/lecture notes – Annual report year: 2009

Toward a scalable flexible-order model for 3D nonlinear water waves
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2009

DG-FEM solution for nonlinear wave-structure interaction using Boussinesq-type equations
Publication: Research - peer-review › Journal article – Annual report year: 2008

An efficient flexible-order model for coastal and ocean water waves
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2008

Briefly on grid generation
Publication: Research - peer-review › Book chapter – Annual report year: 2008

Efficient Solution of the 3D Laplace Problem for Nonlinear Wave-Structure Interaction
Publication: Research - peer-review › Article in proceedings – Annual report year: 2008

Improved velocity potential formulations of highly accurate Boussinesq-type models
Publication: Research - peer-review › Article in proceedings – Annual report year: 2008

Multigrid preconditioning for efficient solution of the 3D Laplace problem for wave-body interaction
Publication: Research - peer-review › Article in proceedings – Annual report year: 2008

Unstructured nodal DG-FEM solution of high-order Boussinesq-type equations
Publication: Research › Ph.D. thesis – Annual report year: 2007

A high-order finite difference method for nonlinear wave-structure interaction
Publication: Research - peer-review › Article in proceedings – Annual report year: 2007

DG-FEM solution for nonlinear wave-structure interaction using Boussinesq-type equations
Publication: Research - peer-review › Article in proceedings – Annual report year: 2007

An unstructured DG-FEM method for nonlinear wave-structure interaction
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006

DG-FEM in computational hydrodynamics
Publication: Research › Conference abstract for conference – Annual report year: 2006

Nodal DG-FEM solution of high-order Boussinesq-type equations
Publication: Research - peer-review › Journal article – Annual report year: 2006

A nodal discontinuous Galerkin spectral/hp method for high order Boussinesq-type equations
Publication: Research - peer-review › Article in proceedings – Annual report year: 2005

Coastal and ocean wave modelling
Publication: Research › Poster – Annual report year: 2005

The next step in coastal numerical models: spectral/hp element methods?
Publication: Research › Article in proceedings – Annual report year: 2005
Projects:

- Architecture acoustics: an improved design process using integrated hybrid room acoustic simulations
  Project: PhD

- High Performance Computational Methods for Low-Noise Supercontinuum Lasers for Optical Coherence Tomography Systems
  Project: PhD

- Optimal Control of PDE-Constrained Systems
  Project: PhD

- Low noise femtosecond supercontinuum sources
  Project: PhD

- Stochastic Simulations for Uncertainty Quantification of wave loads
  Project: PhD

- Multiscale modelling for reservoir-well simulation at DTU compute
  Project: PhD

- Fast Methods for Predicting the Added Resistance on Ships
  Project: PhD

- Efficient Large-Scale Reservoir Simulation on Modern Many-Core Hardware
  Project: PhD

- Optimization Algorithms for Experimental Design, Parameter Estimation, and Control of Dynamic Systems
  Project: PhD

- Large-Scale Computational Electromagnetics for Reflector Antenna Analysis
  Project: PhD

- Uncertainty Quantification for advanced engineering applications
  Project: PhD

- Modelling Nonlinear Wave Interaction with Floating Ocean Energy Devices
  Project: PhD

- Adaptive Simulations of Nonlinear Structures in Magnetized Plasma
  Project: PhD

- Scientific GPU Computing for PDE Solvers
  Project: PhD

- Computation of Superconducting Wind Turbine Generators
  Project: PhD

- Multiscale Simulation of Wave Forces on Ocean Energy Devices
  Project: PhD
Numerical Methods for Simulation and Optimization of Enhanced Oil Recovery Methods
Project: PhD

Efficient solutions to the exact Laplace problem for nonlinear water waves
Project

A Multidomain Spectral Method for Nonlinear Water Waves
Project: PhD