Publications:

Spectral/hp element methods: Recent developments, applications, and perspectives
Publication: Research - peer-review › Journal article – Annual report year: 2018

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 › 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 › Journal article – Annual report year: 2016

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

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

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

Computational Hydrodynamics: How Portable and Scalable Are Heterogeneous Programming Paradigms?
Publication: Research › Ph.D. thesis – Annual report year: 2015

On Devising Boussinesq-type Equations with Bounded Eigenspectra: Two Horizontal Dimensions
Publication: Research › 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 › 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 › Journal article – Annual report year: 2014

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

On the numerical and computational aspects of non-smoothnesses that occur in railway vehicle dynamics
Publication: Research › Conference article – Annual report year: 2014

Sensitivity Analysis of the Critical Speed in Railway Vehicle Dynamics
Publication: Research › 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

Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2015

Anwendung der "Uncertainty Quantification" bei eisenbahndynamischen problemen
Publication: Research - peer-review › Journal article – Annual report year: 2013

Designing Scientific Software for Heterogeneous Computing: With application to large-scale water wave simulations
Publication: Research › Ph.D. thesis – Annual report year: 2014

Development of a GPU-accelerated MIKE 21 Solver for Water Wave Dynamics
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Development of software components for heterogeneous many-core architectures
Publication: Research - peer-review › Book chapter – Annual report year: 2013

Efficient Hybrid-Spectral Model for Fully Nonlinear Numerical Wave Tank
Publication: Research - peer-review › Article in proceedings – Annual report year: 2014

Fast hydrodynamics on heterogenous many-core hardware
Publication: Research - peer-review › Book chapter – Annual report year: 2013

Hybrid-Spectral Model for Fully Nonlinear Numerical Wave Tank
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2013

Multiscale Simulation of Breaking Wave Impacts
Publication: Research › Ph.D. thesis – Annual report year: 2013

Real-Time Simulation of Ship-Structure and Ship-Ship Interaction
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Sensitivity Analysis of the Critical Speed in Railway Vehicle Dynamics
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Stochastic Wave Dynamics and Uncertainty Quantification
Publication: Research - peer-review › Poster – Annual report year: 2013

Towards real time simulation of ship-ship interaction - Part II: double body flow linearization and GPU implementation
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

A comparative study of two fast nonlinear free-surface water wave models
Publication: Research - peer-review › Journal article – Annual report year: 2011

A Coupled Finite Difference and Moving Least Squares Simulation of Violent Breaking Wave Impact
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

A Generic High-performance GPU-based Library for PDE solvers
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2012
A Generic High-performance GPU-based Library for PDE solvers
Publication: Research - peer-review › Sound/Visual production (digital) – Annual report year: 2012

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 › Article in proceedings – 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 - peer-review › 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

Fast high-performance modeling tools for many-core architectures
Publication: Research › Poster – Annual report year: 2011

Improved Software Implementation of DES Using CUDA and OpenCL
Publication: Research › Article in proceedings – Annual report year: 2011

Introduction to GPU Programming
Publication: Research › Sound/Visual production (digital) – Annual report year: 2011

On a fast GPU-accelerated massively parallel method for fully nonlinear water wave computations
Publication: Research › Article in proceedings – Annual report year: 2011

Towards fast real-time analysis of large wave problems on desktop architectures
Publication: Research › Article in proceedings – Annual report year: 2011

Very fast simulation of nonlinear water waves in very large numerical wave tanks on affordable graphics cards
Publication: Research › Sound/Visual production (digital) – Annual report year: 2011

An Efficient GPU-Accelerated Model for Fully Nonlinear Water Waves
Publication: Research › Sound/Visual production (digital) – Annual report year: 2010

Development of an efficient GPU-accelerated model for fully nonlinear water waves
Publication: Research › Conference abstract for conference – Annual report year: 2010

Development of an Efficient GPU-Accelerated Model for Fully Nonlinear Water Waves
Publication: Research › Sound/Visual production (digital) – Annual report year: 2010

Development of Desktop Computing Applications and Engineering Tools on GPUs
Publication: Research › Poster – Annual report year: 2010

High-order finite difference solution for 3D nonlinear wave-structure interaction
Publication: Research › Journal article – Annual report year: 2010

Meshfree simulation of free surface flow and fluid-structure interaction
Publication: Research › Article in proceedings – Annual report year: 2010

Multi-block, boundary-fitted solutions for 3D nonlinear wave-structure interaction
Publication: Research › Article in proceedings – Annual report year: 2010

Numerical Solution of Ordinary Differential Equations: - Analysis and Applications
Publication: Education › Compendium/lecture notes – Annual report year: 2010

A boundary-fitted finite difference solution for nonlinear wave-structure interaction
Publication: Research › Conference abstract in proceedings – Annual report year: 2009

An efficient flexible-order model for 3D nonlinear water waves
Publication: Research › Journal article – Annual report year: 2009
Boundary-fitted solutions for 3D nonlinear water wave-structure interaction
Publication: Research - peer-review › Article in proceedings – Annual report year: 2009

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:

Extension of a Fast Potential Flow Solver to Fully-Nonlinear Wave Loading on Offshore Structures
Project: PhD

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 Expermental 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