Allan Peter Engsig-Karup - DTU Orbit (27/08/2018)

Engsig-Karup, Allan Peter
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Department of Applied Mathematics and Computer Science - Associate Professor
Scientific Computing
Center for Energy Resources Engineering

Publications:

Nonlinear wave-body interaction using a mixed-Eulerian-Lagrangian spectral element model
Publication: Research - peer-review › Article in proceedings – Annual report year: 2018

Numerical simulation of Peregrine breathers using a spectral element model
Publication: Research - peer-review › Article in proceedings – Annual report year: 2018

Room Acoustic Simulations using High-Order Spectral Element Methods
Publication: Research - peer-review › Article in proceedings – Annual report year: 2018

Screening wells by multi-scale grids for multi-stage Markov Chain Monte Carlo simulation
Publication: Research - peer-review › Journal article – Annual report year: 2018

Spectral element FNPF simulation of focused wave groups impacting a fixed FPSO
Publication: Research - peer-review › Article in proceedings – Annual report year: 2018

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

Multi-level techniques for Reservoir Simulation
Publication: Research › Ph.D. thesis – Annual report year: 2017

Numerical Multi-level 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

Anwendung der "Uncertainty Quantification" bei eisenbahndynamischen problemen

Designing Scientific Software for Heterogeneous Computing: With application to large-scale water wave simulations

Development of a GPU-accelerated MIKE 21 Solver for Water Wave Dynamics

Efficient Hybrid-Spectral Model for Fully Nonlinear Numerical Wave Tank

Fast hydrodynamics on heterogenous many-core hardware

Hybrid-Spectral Model for Fully Nonlinear Numerical Wave Tank

Multiscale Simulation of Breaking Wave impacts

Real-Time Simulation of Ship-Structure and Ship-Ship Interaction

Sensitivity Analysis of the Critical Speed in Railway Vehicle Dynamics
Stochastic Wave Dynamics and Uncertainty Quantification
Engsig-Karup, A. P., Bigoni, D. & Glimberg, S. L. 2013
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
Glimberg, S. L. & Engsig-Karup, A. P. 2012
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2012

A Generic High-performance GPU-based Library for PDE solvers
Glimberg, S. L. & Engsig-Karup, A. P. 2012
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
Glimberg, S. L. & Engsig-Karup, A. P. 2012
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
Lindberg, O., Engsig-Karup, A. P. & Bingham, H. B. 2012
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 - 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
Bigoni, D., Engsig-Karup, A. P. & True, H. 2012
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
Glimberg, S. L. & Engsig-Karup, A. P. 2011
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
Engsig-Karup, A. P. & Madsen, M. G. 2011
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 - peer-review › Article in proceedings – Annual report year: 2011
Introduction to GPU Programming
Engsig-Karup, A. P. 2011
Publication: Research › Sound/Visual production (digital) – Annual report year: 2011

On a fast GPU-accelerated massively parallel method for fully nonlinear water wave computations
Engsig-Karup, A. P., Madsen, M. G. & Glimberg, S. L. 2011 Proceedings of ENUMATH.
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Towards fast real-time analysis of large wave problems on desktop architectures
Engsig-Karup, A. P. 2011
Publication: Research › Sound/Visual production (digital) – Annual report year: 2011

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

An Efficient GPU-Accelerated Model for Fully Nonlinear Water Waves
Engsig-Karup, A. P. & Madsen, M. G. 2010
Publication: Research › Sound/Visual production (digital) – Annual report year: 2010

Development of an efficient GPU-accelerated model for fully nonlinear water waves
Madsen, M. G., Engsig-Karup, A. P., Dammann, B. & Frisvad, J. R. 2010
Publication: Research › Conference abstract for conference – Annual report year: 2010

Development of an Efficient GPU-Accelerated Model for Fully Nonlinear Water Waves
Engsig-Karup, A. P. 2010
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 - peer-review › Journal article – Annual report year: 2010

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

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

Numerical Solution of Ordinary Differential Equations: - Analysis and Applications
Engsig-Karup, A. P. & Thomsen, P. G. 2010
Publication: Education › Compendium/lecture notes – Annual report year: 2010

A boundary-fitted finite difference solution for nonlinear wave-structure interaction
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2009
An efficient flexible-order model for 3D nonlinear water waves
Publication: Research - peer-review › 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
Engsig-Karup, A. P. 2009
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
An unstructured DG-FEM method for nonlinear wave-structure interaction

DG-FEM in computational hydrodynamics

Nodal DG-FEM solution of high-order Boussinesq-type equations

A nodal discontinuous Galerkin spectral/hp method for high order Boussinesq-type equations

Coastal and ocean wave modelling

The next step in coastal numerical models: spectral/hp element methods?

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
Pind Jörgensson, F. K., Jeong, C., Engsig-Karup, A. P. & Strømann-Andersen, J. B. 01/11/2016 → 31/10/2019
Project: PhD

High Performance Computational Methods for Low-Noise Supercontinuum Lasers for Optical Coherence Tomography Systems
Mieritz, A. F., Sørensen, M. P., Dammann, B. & Engsig-Karup, A. P. 01/10/2015 → 31/01/2018
Project: PhD

Optimal Control of PDE-Constrained Systems
Christiansen, L. H., Jørgensen, J. B., Engsig-Karup, A. P. & Pedersen, M. 15/09/2015 → 25/01/2019
Project: PhD

Low noise femtosecond supercontinuum sources
Bravo Gonzalez, I., Bang, O., Engsig-Karup, A. P. & Sørensen, M. P. 01/09/2015 → 31/08/2018
Project: PhD
Stochastic Simulations for Uncertainty Quantification of wave loads
Jensen, C. L., Engsig-Karup, A. P., Bigoni, D. & Bredmose, H.
01/08/2015 → 31/10/2015
Project: PhD

Multiscale modelling for reservoir-well simulation at DTU compute
Quadrio, N., Engsig-Karup, A. P., Byrne, M. & Glimberg, S. L.
01/11/2014 → 31/07/2017
Project: PhD

Fast Methods for Predicting the Added Resistance on Ships
01/09/2013 → 09/12/2016
Project: PhD

Efficient Large-Scale Reservoir Simulation on Modern Many-Core Hardware
01/04/2013 → 30/09/2016
Project: PhD

Optimization Algorithms for Experimental Design, Parameter Estimation, and Control of Dynamic Systems
Frison, G., Jørgensen, J. B., Poulsen, N. K., Engsig-Karup, A. P., Axehill, D. & Ferreau, H. J.
01/10/2012 → 20/04/2016
Project: PhD

Large-Scale Computational Electromagnetics for Reflector Antenna Analysis
15/12/2011 → 19/03/2015
Project: PhD

Uncertainty Quantification for advanced engineering applications
15/12/2011 → 19/03/2015
Project: PhD

Modelling Nonlinear Wave Interaction with Floating Ocean Energy Devices
01/10/2010 → 01/09/2015
Project: PhD

Adaptive Simulations of Nonlinear Structures in Magnetized Plasma
Treue, F., Naulin, V., Engsig-Karup, A. P. & Evgrafov, A.
15/09/2010 → 24/10/2014
Project: PhD

Scientific GPU Computing for PDE Solvers
Glimberg, S. L., Engsig-Karup, A. P., Dammann, B., Walther, J. H., Cai, X. & Olson, L.
01/05/2010 → 12/12/2013
Project: PhD

Computation of Superconducting Wind Turbine Generators
Rodríguez Zermeno, V. M., Sørensen, M. P., Anbarasu, R., Kjær, P. C., Pedersen, N. F., Engsig-Karup, A. P., Campbell, A. M. & Grilli, F.
15/12/2008 → 24/05/2012
Project: PhD
Multiscale Simulation of Wave Forces on Ocean Energy Devices
15/08/2008 → 28/08/2012
Project: PhD

Numerical Methods for Simulation and Optimization of Enhanced Oil Recovery Methods
Völcker, C., Jørgensen, J. B., Thomsen, P. G., Engsig-Karup, A. P., Foss, B. A. & Kristensen, M. R.
01/01/2008 → 24/08/2012
Project: PhD

Efficient solutions to the exact Laplace problem for nonlinear water waves
Engsig-Karup, A. P. & Bingham, H. B.
01/08/2006 → 15/08/2008
Project

A Multidomain Spectral Method for Nonlinear Water Waves
Engsig-Karup, A. P., Madsen, P. A., Bingham, H. B., Thomsen, P. G. & Grue, J.
01/08/2003 → 02/01/2007
Project: PhD