Turbulence Modeling

Compound wall treatment for complex turbulent flows

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Topic

Turbulence modeling

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View

Data Driven Simulations and Machine Learning 1

A Rapid Prediction Methodology for Propeller Hydrodynamic Performance Based on Convolutional Neural Network

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Topic

Optimization, control, data driven simulations and machine learning

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General CFD Method 1

A weak-imposition method for viscous boundary condition treatments in the framework of second-order unstructured finite volume method

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Topic

General CFD

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View

Reacting flows and combustion 2

Efficient Modeling of Liquid Fuel Spills and Fire Spread in FireFOAM

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Topic

Reacting flows and combustion

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Reacting flows and combustion 2

Numerical investigation on detonation initiation induced by double hot spots

SunJie * [1] , YangPengfei [2] , YuDehai [2] , WangYiqing [1] , ChenZheng [1]

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Topic

Reacting flows and combustion

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View

Data Driven Simulations and Machine Learning 1

Data-driven subgrid-scale modeling for wall turbulence

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Topic

Optimization, control, data driven simulations and machine learning

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HPC and Data Processing Tools 1

A Novel Mixed Precision Defect Correction Solver for Heterogeneous Computing in OpenFOAM

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Topic

HPC and cloud computing

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Turbulence Modeling

OpenFOAM large-eddy simulations of sheared convective boundary layers

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Topic

Turbulence modeling

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Data Driven Simulations and Machine Learning 1

Extending and Integrating Fourier Neural Operators with Chemical Kinetic Solvers

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Topic

Optimization, control, data driven simulations and machine learning

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View

Reacting flows and combustion 2

IDDES simulation of combustion mode transition and hysteresis effect in a dual-mode scramjet

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Topic

Reacting flows and combustion

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Reacting flows and combustion 2

Numerical investigation of soot formation in laminar inverse diffusion oxy-fuel flame

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Topic

Reacting flows and combustion

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View

Reacting flows and combustion 1

High-fidelity simulations of pressurized inverse diffusion sooting flames

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Topic

Reacting flows and combustion

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View

Multiphase Flows 1

A versatile two-phase flow solver based on highly accurate interface capturing method THINC/QQ

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Topic

Multiphase flows

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View

Reacting flows and combustion 2

Effects of Hydrogen and Ammonia Substitution on Soot Formation in Turbulent Ethylene/Nitrogen Jet Flames

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Topic

Reacting flows and combustion

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View

Reacting flows and combustion 2

Nonequilibrium effect in a supersonic jet flame modeled based on zonal nonequilibrium model

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Topic

Reacting flows and combustion

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View

Multiphase Flows 1

Numerical modeling of the wave-induced coastal scour near the pile at a sloping beach using OpenFOAM

ZhangXuan , YinZegao * , WangYanxu , ZhengFuxiang

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Topic

Multiphase flows

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View

Multiphase Flows 1

Two-fluid model approach in simulation of CO2 ejectors

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Topic

Multiphase flows

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Presentation Time: 6.25

Reacting Flows and Combustion 3

Investigation of Plasma-enhanced Ethylene/Air Mixing in a Cavity-based Scramjet Combustor

ZhangZihao [1] , ZhuJiajian * [1] , TianYifu [1] , SunMingbo [1] , ZhangFan [2] , BanYangyang [2] , ZhangNaiyuan [2]

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Topic

Reacting flows and combustion

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View

Data Driven Simulations and Machine Learning 2

Application of Deep Neural Networks for Efficient Chemical Source Term Integration in Ammonia/Hydrogen Combustion Simulations

XiaoKe [1] , LiHan [1,2] , XuYangchen [1] , ChenZhi X. * [1,2]

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Topic

Reacting flows and combustion

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Data Driven Simulations and Machine Learning 1

Accelerated Segregated Finite Volume Solid Mechanics Solvers Using Machine Learning

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Topic

Optimization, control, data driven simulations and machine learning

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Reacting Flows and Combustion 3

Eulerian-Lagrangian Modelling for Aluminum Combustion Dynamics Post-Incident Shock Wave: Analysis via DSRYrhoCentralFOAM

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Topic

Reacting flows and combustion

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View

Reacting flows and combustion 1

Simulation of Cellular Structure and Propagation Mechanism of Liquid Ethanol-Fueled Rotating Detonation Using OpenFOAM

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Topic

Reacting flows and combustion

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General CFD Method 1

Hybrid Eulerian-Lagrangian solver for high-speed reacting flows based on OpenFOAM: Validations

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Topic

General CFD

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View

Turbulence Modeling

Analysis Of The Influence Of Different Wall Models For Wall-Modeled Large Eddy Simulation On Hydrodynamic Noise

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Topic

Turbulence modeling

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View

Data Driven Simulations and Machine Learning 1

the application of neural network in detonative combustion simulations

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Topic

Optimization, control, data driven simulations and machine learning

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View

Turbulence Modeling

Analysis of vortical structures in flow through pin-fin arrays using Ω criterion

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Topic

Turbulence modeling

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View

HPC and Data Processing Tools 1

xsolver4foam: moving OpenFOAM towards heterogeneous clusters

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Topic

HPC and cloud computing

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HPC and Data Processing Tools 1

Two-level preconditioned and recycled conjugate gradient method on heterogeneous clusters with GPUs

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Topic

HPC and cloud computing

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Reacting Flows and Combustion 3

Numerical study of the combustion flow characteristics in a hydrogen-fueled cavity-based scramjet combustor

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Topic

Reacting flows and combustion

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View

Turbulence Modeling

Numerical Investigations Of Turbulent Boundary Layers Influenced By The Spanwise Curvature

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Topic

Turbulence modeling

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General CFD Method 1

Numerical Simulations Of Partially Filled Spherical Tank Sloshing Using OpenFOAM In Comparison With Experimental Results

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Topic

General CFD

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Data Driven Simulations and Machine Learning 2

Coupling Physics Informed Neural Networks with OpenFOAM

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Topic

Optimization, control, data driven simulations and machine learning

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Data Driven Simulations and Machine Learning 2

Hybrid CFD - A Data-driven approach to speed-up incompressible CFD Solvers

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Topic

General CFD

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Data Driven Simulations and Machine Learning 2

One-Step SelfSimulation: A Novel Approach to Training Machine Learning Constitutive Models from Experimental Data.

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Topic

Optimization, control, data driven simulations and machine learning

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General CFD Method 1

Towards Polynomial Smoothing Using Chebyshev Polynomials

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Topic

HPC and cloud computing

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Multiphase Flows 1

Polydispersed Multifluid Numerical Modelling Of Cavitation Erosion

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Topic

Multiphase flows

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HPC and Data Processing Tools 1

Pushing the limit of supercritical flame simulation at detailed transport and chemistry accuracy with deep learning towards trillion-cell scale

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Topic

HPC and cloud computing

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Reacting Flows and Combustion 3

Simulations Of Direct Initiation Of Coal Char Dust Cylindrical Detonation In Hot Air

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Topic

Multiphase flows

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HPC and Data Processing Tools 1

Enhancing Computational Fluid Dynamics Simulations through GPU-Accelerated Sparse Matrix Solvers in OpenFOAM

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Topic

HPC and cloud computing

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View

Reacting Flows and Combustion 3

Evaluation of Droplet Evaporation Models for the LES of a Turbulent Dilute Spray Flame

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Topic

Sprays and injection

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Reacting flows and combustion 1

Non-Reactive and Reactive Simulations of a Full Scale Thermal Oxidizer

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Topic

Reacting flows and combustion

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HPC and Data Processing Tools 1

Improving Performance of a Large Scale Gas-Turbine-Combustor LES

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Topic

HPC and cloud computing

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Data Driven Simulations and Machine Learning 2

MetaOpenfoam: an LLM-based multi-agent framework for CFD

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Topic

Optimization, control, data driven simulations and machine learning

View the abstract

View

Fluid Structure Interaction 1

Comparing finite volumes and finite elements for simulation of laser shock peening

Martin Isoz * [1] , Pavel Gruber [1] , Ondrej Jezek [1] , Lucie Kubickova [1] , Dusan Gabriel [1] , Jan Kaufman [2] , Jan Brajer [2]

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Topic

FSI and solid mechanics

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View

Turbulence Modeling

Predicting laminar-turbulent transition in rough-wall turbine blade boundary layer with OpenFOAM

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Topic

Turbulence modeling

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View

Presentation Time: 6.26

Fluid Structure Interaction 1

Research on resistance reduction technology for biomimetic underwater vehicles

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Topic

FSI and solid mechanics

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View

Fluid Structure Interaction 1

Modelling Liquefaction in Floating Offshore Wind Farms

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Topic

FSI and solid mechanics

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HPC and Data Processing Tools 2

Proposal for a new storage backend in OpenFOAM

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Topic

HPC and cloud computing

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Fluid Structure Interaction 2

Numerical Study of Axial-Flow-Induced Vibrations on Cantilevered Rods for Nuclear Reactor Applications

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Topic

FSI and solid mechanics

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View

Compressible flow 1

A high-fidelity OpenFOAM solver for compressible turbulent multi-species flows

Francesco Duronio * , Andrea Di Mascio

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Topic

Compressible flow

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Fluid Structure Interaction 2

A Tailored Dynamic Mesh for Continuous Forming Simulation

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Topic

FSI and solid mechanics

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Compressible flow 1

Thermochemical nonequilibrium effect of the hypersonic flow passing through the cylinder

LiuChaoyang * , HuangWei , ZhangJincheng , LiXin , ZouJunbo , AiJunding , XieZan

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Topic

Compressible flow

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View

Fluid Structure Interaction 2

Mitigating tip vortices through local permeability

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Topic

Offshore and renewable energy

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HPC and Data Processing Tools 2

Research on the Integration of OpenFOAM Pre and Post-processing based on FastCAE

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Topic

Pre and post-processing tools

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View

Multiphase Flows 2

Design and development of the solver for two continua particle-laden flow

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Topic

Multiphase flows

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View

HPC and Data Processing Tools 2

Functional Programming Paradigm of Python for Scientific Computation Pipeline Integration

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Topic

Pre and post-processing tools

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View

Multiphase Flows 2

Large-eddy simulation and spray model development of liquid ammonia injection under non-flashing and flash boiling conditions

JinZhuoying [1] , WuHaoqing [1] , XuShijie [1] , ZhouDezhi [2] , QianYong [1] , LuXingcai * [1]

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Topic

Sprays and injection

View the abstract

View

Fluid Structure Interaction 2

Numerical study of a submerged flexible stem under large excursion regular wave.

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Topic

FSI and solid mechanics

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View

Multiphase Flows 2

Customized OpenFOAM Lagrangian Solver for Super-heated Spray Evaporation - Comparison with OpenFOAM numerical results and Experimental Data and KIVA -

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Topic

Sprays and injection

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Fluid Structure Interaction 2

Variable-Time-Step Improved Runge-Kutta Algorithm for Loosely Coupled Fluid-Structure Interaction Simulation

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Topic

FSI and solid mechanics

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Fluid Structure Interaction 3

Initial steps towards CFD based optimization of the bread baking process

Tomáš Hlavatý [1,2] , Martin Isoz *, [1,2] , Anna Kovárnová [2] , Tomáš Moucha [2] ,Marcela Sluková [2]

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Topic

Heat and mass transfer

View the abstract

View

Fluid Structure Interaction 3

Accounting For Mechanical Properties Of ZDDP Tribofilms In Continuum-Based Wear Simulations

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Topic

FSI and solid mechanics

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View

Naval Hydrodynamics

Numerical Simulation Of JBC Ship Wake Based On Wall-Modeled Large Eddy Method In OpenFOAM

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Topic

Naval hydrodynamics

View the abstract

View

Reacting Flows and Combustion 5

Numerical study on the effect of equivalence ratio perturbations on premixed hydrogen/air conical flame propagation

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Topic

Reacting flows and combustion

View the abstract

View

HPC and Data Processing Tools 2

Flow Visualization Via Vortex-Surface Field In OpenFOAM

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Topic

Pre and post-processing tools

View the abstract

View

Naval Hydrodynamics

Numerical Study On Slamming Loads Of Ship Advancing In Focused Wave

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Topic

Naval hydrodynamics

View the abstract

View

Compressible Flow 2

Porous Trailing Edge for Airfoil Noise Reduction at Low-Speed Stall Conditions

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Topic

Aerodynamics

View the abstract

View

Compressible Flow 2

Detonation Field Reconstruction Based on Machine Learnging Method

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Topic

Optimization, control, data driven simulations and machine learning

View the abstract

View

Compressible Flow 2

DSMC investigations of aerodynamic drag and heat reduction for hypersonic rarified flow around bluff body

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Topic

Aerodynamics

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View

Reacting Flows and Combustion 4

Development of preferential diffusion model in FGM for three-stream combustion of hydrogen using variable Lewis number

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Topic

Reacting flows and combustion

View the abstract

View

Reacting Flows and Combustion 4

Investigation on H2/O2 rotating detonation engine with hollow and annular combustors

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Topic

Reacting flows and combustion

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Reacting Flows and Combustion 4

Numerical Study of the Flame Propagation in High-Speed Non-Uniform Flow Fields

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Topic

Reacting flows and combustion

View the abstract

View

HPC and Data Processing Tools 2

FlameTest: Benchmarking Suite for Turbulent Combustion Numerical Simulations with CPU and GPU Program Correctness and Efficiency Evaluation

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Topic

Pre and post-processing tools

View the abstract

View

Naval Hydrodynamics

CFD Simulation Of Slamming Load Of KCS Ship Under Oblique Waves Using Overset Method

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Topic

Naval hydrodynamics

View the abstract

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Fluid Structure Interaction 3

Two Way Coupled CFD-FEA Method For Dam Break Simulation Of An Elastic Beam

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Topic

FSI and solid mechanics

View the abstract

View

Naval Hydrodynamics

Optimizing DTMB 5415 Hull Resistance: A Multi-Objective Approach with Free-Form Deformation Volume Mesh

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Topic

Naval hydrodynamics

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Reacting Flows and Combustion 4

Large Eddy Simulations of dual-bluff-body-stabilized Flames

WenQizhe [1,3] , ZhangMin [1,2] , ShaoChangxiao [4] , TianYucheng [5] , YangNiewei [5] , LiLei [5] , AnQiang [5]

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Topic

Reacting flows and combustion

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Presentation Time: 6.27

Reacting Flows and Combustion 4

Modeling Compressible Reacting Flows Using Deep Neural Networks for Tabulated Chemical Kinetics

ZhuXu * [1] , AnJian [2] , WeiLijie [3] , RenZhuyin [1]

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Topic

Reacting flows and combustion

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Fluid Structure Interaction 3

Towards A Lubricated Wear Model Using The Finite Area Method

Luka Balatinec [1], Tessa Uroić [2] and Hrvoje Jasak [3]

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Topic

FSI and solid mechanics

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Reacting Flows and Combustion 4

Simulation on supersonic turbulent combustion accelerated by fully-connected neural network

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Topic

Reacting flows and combustion

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Fluid Structure Interaction 3

Exploring Overset Meshing Strategy in Fluid-Structure Interaction Problems

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Topic

FSI and solid mechanics

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Reacting Flows and Combustion 5

Numerical study on the propagation characteristics of semi-confined detonation bounded by water mist

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Topic

Reacting flows and combustion

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Reacting Flows and Combustion 5

Numerical study of differential diffusion effects on hydrogen-enriched turbulent non-premixed flames

Ruiye Zuo, Xingjian Wang

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Topic

Reacting flows and combustion

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Compressible Flow 2

Numerical study on the influence of high-frequency and small-amplitude inlet pressure disturbance on the propagation characteristics of hydrogen-air rotating detonation wave

Wuyu, ChenHuangwei

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Topic

Compressible flow

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Compressible Flow 2

Numerical investigation of the effect of solid obstacle thickness on flame acceleration and deflagration-to-detonation transition

Liangyi Fan, Jiabao Wang, Jianfeng Pan, Yuejin Zhu

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Topic

Compressible flow

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Compressible flow 1

Open Source CFD and Geometric Deep Learning for accelerated aerodynamic optimization and design augmentation.

Apostolos Krassas [3] , Lock Angus [1] , Eugene De Villiers * [2]

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Topic

Aerodynamics

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HPC and Data Processing Tools 2

The Effect Of NDR InfiniBand On OpenFOAM Simulations

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Topic

Technical session

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Offshore and Renewable Energy

Analysis of an array of point absorber wave energy converters

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Topic

Offshore and renewable energy

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Complex materials

CFD Investigation of Aneurysmatic and Sane Aorta using OpenFOAM

Francesco Duronio * , Andrea Di Mascio

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Topic

Biofluid dynamics and biomedical applications

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Complex materials

A fast numerical method with non-iterative source term for pseudo-two-dimension lithium-ion battery model

ChenQiyu

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Topic

Lithium battery

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View

Optimization Method

Research on Full-parameter Optimization Design of a Novel Contra-rotating Shaftless Rim-Driven Thruster

LiChenran , LuYu * , GuZhuhao

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Topic

Optimization, control, data driven simulations and machine learning

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Complex materials

Combined augmented Lagrangian-regularisation method for computing viscoplastic flows

Alexander Vikhansky *

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Topic

Complex materials

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Civil engineering and wind engineering

Numerical investigation of the turbulent flow around a monopile above the scoured bed subjected to breaking waves

TAOGang [1] , HUANGZhaoyuan [1,2] , ZHANGSiwen [1] , SHIZijie [1]

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Topic

Civil engineering and wind engineering

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Civil engineering and wind engineering

Simulation study on the influence of downstream structural joint surface defects on cavitation in adjacent areas

XueYichen [1] , ZhuSisi [2] , YeDezhen [2] , ZhouJikai * [1]

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Topic

Civil engineering and wind engineering

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Optimization Method

Accelerating shape optimization by adaptively updated deep neural networks

Lucie Kubíčková [1,2] , Ondřej Gebouský [2,3] , Jan Haidl [2,3] , Martin Isoz [*, 1,2]

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Topic

Optimization, control, data driven simulations and machine learning

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Optimization Method

Multi-objective optimization of a dual bluff body stabilized combustor using large eddy simulation with OpenFOAM

YangJun [1] , WenQizhe [2] , ShaoChangxiao * [1] , WangLei [1] , YangNiewei [3] , LiLei [3] , AnQiang [3] , ChenZhi [4]

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Topic

Optimization, control, data driven simulations and machine learning

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Offshore and Renewable Energy

Numerical simulation of open hole oscillating float type wave energy convertor based on OpenFOAM

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Topic

Offshore and renewable energy

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Optimization Method

An optimized dynamic mode decomposition for flow analysis and forecasting

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Topic

Optimization, control, data driven simulations and machine learning

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Offshore and Renewable Energy

Validation and Verification of a Finite Volume Simo-Reissner Beam Method for Modeling Moored Floating Body Dynamics

Amirhossein Taran * [1] , Seevani Bali [1] ,Zeljko Tukovic [2] , Vikram Pakrashi [1] , Philip Cardiff [1]

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Topic

Offshore and renewable energy

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General CFD Method 2

Studying ventilation effects in mitigating airborne disease transmission in a classroom using OpenFOAM

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Topic

General CFD

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Civil engineering and wind engineering

Numerical Simulation and Experimental Study of Gas Pollutant Dispersion from Chemical Factories in Uneven Terrain

ZhongkunWang * [1] , HanqingWang [2] , XiuminDou [1] , ZhengmingLi [1]

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Topic

Civil engineering and wind engineering

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Complex materials

Numerical studies on the respiratory airflow unsteadiness

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Topic

Biofluid dynamics and biomedical applications

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Optimization Method

Scrutinization and application of the topology optimization framework in OpenFOAM v2312

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Topic

Optimization, control, data driven simulations and machine learning

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Offshore and Renewable Energy

Optimising the Overset Mesh Solver in OpenFOAM for Offshore Renewable Applications

Ranjodh Rai , QianLing * , MaZhihua , BaiWei

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Topic

Offshore and renewable energy

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Complex materials

Development and Assessment of Coupled Approaches for Modeling Viscoelastic Fluid Flows

Gabriel Magalhães * [1] , Ricardo Costa [1] , João Miguel Nóbrega [1] , Hrvoje Jasak [2]

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Topic

Complex materials

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Complex materials

Hemodynamic effects of aortic arch presence upstream from healthy aorta and abdominal aortic aneurysm models

HANXinyi * [1] , Mathieu Specklin [2] , Smaine Kouidri [1] , Louise Koskas [1] , Farid Bakir [1] , Jean-Michel Davaine [3]

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Topic

Biofluid dynamics and biomedical applications

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General CFD Method 2

Numerical simulation of laminar flow and mass transport characteristics around three elliptic cylinders in equilateral triangular arrangement

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Topic

General CFD

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Complex materials

Development and Assessment of an Integrated Modelling Approach for the Extrusion Blow Modelling Process

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Topic

Complex materials

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General CFD Method 2

Applications Of The Sediment Transport Solver In FOAM-Extend

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Topic

General CFD

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General CFD Method 2

Build partitioned multi-scale simulations with OpenFOAM and preCICE

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Topic

General CFD

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