

ICCFD11 Program: Monday, July 11th, 2022

07:30 am – 08:00 am

Speaker's Briefing

08:00 am – 08:15 am

Opening Remarks by Co-Chairs

Ali'i Room

08:15 am – 09:15 am

Invited Lecture

Ali'i Room

01 | Session

ICCFD11-0101

Risks and Rewards of Multiphase Flow Simulations

Prof. Stéphane Zaleski

Sorbonne Université, Paris, France

02 | Chair: Prahalad Iyer

Large Eddy Simulation - I

Lanai Room

09:30 am – 12:00 pm

09:30 am

ICCFD11-0201

Turbulence Development Assessment in a LES Simulation
M. Bove, G. Cazes, M. Draper and M. Mendina

Universidad de la Republica, Uruguay

10:00 am

ICCFD11-0202

Atmospheric Boundary Layer Simulations with a LES Model Nested in a Regional Atmospheric Simulation

M. Bove, A. Vignolo, M. Mendina, G. Usera and G. Cazes
Universidad de la Republica, Uruguay

10:30 am

ICCFD11-0203

Large Eddy Simulation of autoignition and extinction processes using Approximate Deconvolution Model

L. Caban, A. Wozniak, A. Boguslawski and A. Tyliczszak
Poland

11:00 am

ICCFD11-0204

Wall-Modeled LES of Turbulent Flow Over a Two-Dimensional Gaussian Bump

Prahladh S. Iyer and Mujeeb R. Malik
NASA Langley Research Center, USA

11:30 am

ICCFD11-0205

Evaluation of High-Lift Prediction Capability of Wall-modeled LES for a Multielement 30P30N Airfoil

Prahladh S. Iyer, William K. Anderson, Ponnampalam, Balakumar, Li Wang, Eric Nielsen and Mujeeb R. Malik
NASA Langley Research Center, USA

03 | Chair: Eric Ching

Mesh Motion and Adaptation - I

Molokai Room

09:30 am – 12:00 pm

09:30 am

ICCFD11-0301

High-Order Spatial and Temporal Approaches for Overset Applications and AMR Grids

Dylan Jude, Jayanarayanan Sitaraman and Andrew Wissink
U.S. Army Combat Capabilities Development Command, USA

10:00 am

ICCFD11-0302

Output-Based Mesh Adaptation for High-Speed Flows

James G. Coder, Benjamin L. S. Couchman, Marshall C. Galbraith, Steven R. Allmaras and Nick Wyman
University of Tennessee, Knoxville, USA

10:30 am

ICCFD11-0303

Flux Reconstruction Solver for Arbitrarily Unstructured Grids with R-refinement

R. Dhib, F. Ben Ameer, R. Vandenhoeck, A. Lani and S. Poedts
University of Leuven, Belgium

11:00 am

ICCFD11-0304

Effect of Anisotropic Mesh Adaptation on Surface Pressure Predictions for Atmospheric Entry Simulations

D. Ekelschot and J.M. Brock
NASA Ames Research Center, USA

11:30 am

ICCFD11-0305

Anisotropic Mesh Modifications for the Moving Discontinuous Galerkin Method with Interface Condition Enforcement for Robust Simulations of High-Speed Viscous Flows

Eric J. Ching, Andrew Kercher and Andrew Corrigan
Naval Research Laboratory, USA

Monday, July 11th, 2022

04 | Chair: David Zingg

Higher Order Methods - I

Oahu Room

09:30 pm - 12:00 pm	<p>09:30 am ICCFD11-0401 <i>Stable and Non-dissipative Kinetic-Energy and Entropy Preserving (KEEP) Schemes for Compressible Flows</i> Y. Kuya and S. Kawai Tohoku University, Japan</p>	<p>10:00 am ICCFD11-0402 <i>Positivity-Preserving Entropy Stable Spectral Collocation Schemes of Arbitrary Order of Accuracy for the 3-D Navier-Stokes Equations</i> N. K. Yamaleev and J. Upperman Old Dominion University, USA</p>	<p>10:30 am ICCFD11-0403 <i>Stable and Conservative High-Order Methods on Triangular Elements Using Tensor-Product Summation-By-Parts Operators</i> T. Montoya and D. W. Zingg University of Toronto, Canada</p>	<p>11:00 am ICCFD11-0404 <i>Obtaining Accurate Functionals from High-Order Generalized Summation-by-Parts Discretizations in Curvilinear Coordinates</i> D.A. Craig Penner and D.W. Zingg University of Toronto, Canada</p>	<p>11:30 am ICCFD11-0405 <i>Assessment of a High-Order Implicit Residual Smoothing Time Scheme for Multiblock Curvilinear Meshes</i> A. Biener, X. Gloerfelt and P. Cinnella Arts et Metiers Tech, France</p>
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12:00 pm - 1:15 pm

Hosted Lunch

Hale Piilani Room

05 | Chair: Paola Cinnella

Discrete Galerkin Methods

Lanai Room

01:15 pm - 2:45 pm	<p>01:15 pm ICCFD11-0501 <i>Large-Scale Investigation of 3D Discontinuous-Galerkin-Hancock Method for Hyperbolic Balance Laws with Stiff Local Sources</i> W. Kaufmann and J.G. McDonald University of Ottawa, Canada</p>	<p>01:45 pm ICCFD11-0502 <i>Deneb: An Open-Source High-Performance Flow Solver Based on DRM-DG Method</i> Hojun You, Juhyun Kim and Chongam Kim Seoul National University, S. Korea</p>			
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06 | Chair: Neal Chaderjian

Rotorcraft CFD

Molokai Room

01:15 pm - 2:45 pm	<p>01:15 pm ICCFD11-0601 <i>Wake Breakdown in High-Fidelity CFD Simulations of Rotor-in-Hover: New Tools & Insights</i> Nathan Hariharan, Jennifer N. Abras, and Robert Narducci Department of Defense (DoD) High Performance Computing Modernization Program, USA</p>	<p>01:45 pm ICCFD11-0602 <i>Optimization of Non-Conventional Airfoils for Martian Rotorcraft using Direct Numerical Simulations</i> Lidia Caros, Oliver Buxton and Peter Vincent Imperial College, UK</p>	<p>02:15 pm ICCFD11-0603 <i>Quantitative Approach for the Accurate CFD Simulation of Hover in Turbulent Flow</i> Neal M. Chaderjian NASA Ames Research Center, USA</p>		
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Monday, July 11, 2022

07 | Chair: Scott Morton

Multidisciplinary Methods

Oahu Room

01:15 pm - 2:45 pm

01:15 pm
ICCFD11-0701
A Multi-Physics Modeling Framework for Plasma Wind Tunnels
A. Munafo, V. Le Maout, S. Kumar, R. Chiodi, F. Panerai, K. Stephani, D. J. Bodony, and M. Panesi
University of Illinois, Urbana-Champaign, USA

01:45 pm
ICCFD11-0702
A Nonlinear Schur Complement Solver for CFD-Based Multidisciplinary Models
Anil Yildirim, Justin S. Gray, and Joaquim R. R. A. Martins
University of Michigan, USA

02:15 pm
ICCFD11-0703
An Infrastructure for Algorithmic Flexibility in Multi-fidelity and Multi-disciplinary CFD Simulations
S. Morton, N. Hariharan, and D. McDaniel
Department of Defense High Performance Computing Modernization Program, USA

08 | Chair: Michel Bergmann

Fluid Structure Interaction & Porosity

Lanai Room

03:00 pm - 04:30 pm

03:00 pm
ICCFD11-0801
Fluid-Structure Interaction with Multi-Body Collision: Application to Collective Fish Swimming in an Impermeable or Porous Enclosure
M. Bergmann
National Institute for Research in Digital Science and Technology (INRIA), France

03:30 pm
ICCFD11-0802
XCOMPUTE: Algorithms and Instruction Sequences for CFD/FEA Multi-Physics
G.J. Orr, R.J. Kwan and M. Doudar
Xplicit Computing Inc, USA

04:00 pm
ICCFD11-0803
Prediction of Permeability for Porous Materials Using a Surrogate Model
Vijay B. Mohan Ramu and Savio J. Poovathingal
University of Kentucky, USA

09 | Chair: Gerrit-Daniel Stich

Actuator Disk

Molokai Room

03:00 pm - 04:30 pm

03:00 pm
ICCFD11-0901
Propeller Representation in Full- Vehicle CFD: Actuator Disk Versus Body-Force Modeling Approaches
Tianbo Xie and Alejandra Uranga
University of Southern California-Los Angeles, USA

03:30 pm
ICCFD11-0902
Improved Actuator Line Method For Ducted Fan Applications
M-A. Breault and G. Dumas
Laval University, Canada

04:00 pm
ICCFD11-0903
Validation of Actuator Disk, Actuator Line and Sliding Mesh Methods within the LAVA Solver
Gerrit-Daniel Stich, Luis S. Fernandes, Gaetan Kenway, Jeffrey A. Housman and Cetin C. Kiris
NASA Ames Research Center, USA

10 | Chair: H. T. Huynh

Higher Order Methods - II

Oahu Room

03:00 pm - 04:30 pm

03:00 pm
ICCFD11-1001
Output-Based h-p Refinement Strategy with Anisotropic AMR and High-Order CENO Finite-Volume Scheme for Three-Dimensional Inviscid Flows
C. N. Ngigi and C. P. T. Groth
University of Toronto, Canada

03:30 pm
ICCFD11-1002
A High-Order Low-Dissipation Euler-Lagrange Method for Compressible Gas-Particle Flows
Meet Patel and Jesse Capecehatro
University of Michigan, USA

04:00 pm
ICCFD11-1003
Discontinuous Galerkin, Implicit Runge-Kutta, and Collocation Methods for Ordinary Differential Equations (or Time Stepping)
H. T. Huynh
NASA Glenn Research Center, USA

06:00 pm - 08:00 pm

Hosted Reception

Ocean Cottage Lawn

ICCFD11 Program: Tuesday, July 12, 2022

07:30 am – 08:00 am

Speaker's Briefing

08:15 am – 09:15 am

Invited Lecture

Ali'i Room

11 | Session

ICCFD11-1101

Digital Transformation and Smart Design in Manufacturing Process Realized on the Supercomputer "Fugaku"

Prof. Makoto Tsukobura

Kobe University, Kobe, Japan

12 | Chair: Jeffrey Housman

Acoustics

Lanai Room

09:30 am – 12:00 pm

09:30 am

ICCFD11-1201

Ray Tracing Methodology for Jet Noise Prediction

T. Shanbhag, B. Y. Zhou, C. R. S.

Ilário and J. J. Alonso

Stanford University, USA

10:00 am

ICCFD11-1202

A Zonal Direct-Hybrid Aero-acoustic Simulation Framework Using a High-Order Discontinuous Galerkin Spectral Element Method

D. Kempf and C.-D. Munz

Universitat Stuttgart, Germany

10:30 am

ICCFD11-1203

Assessment of Wavelet-based Separation Algorithms on Turbulent Boundary Layer Trailing-Edge Noise Prediction

D.H. Kang and S. Lee

University of California, Davis

11:00 am

ICCFD11-1204

Predicting Orion Launch Abort Acoustics

F. Cadieux, M. Barad, J. Jensen, J. Angel and C. Kiris

NASA Ames Research Center, USA

11:30 am

ICCFD11-1205

Algorithmic Improvements to a High-Order Space Marching Method for Sonic Boom Propagation

J. Housman, J. Jensen, G. Kenway and C. Kiris

NASA Ames Research Center, USA

13 | Chair: Michael Olsen

Mesh Motion and Adaptation - II

Molokai Room

09:30 am – 12:00 pm

09:30 am

ICCFD11-1301

Developing a Modern CFD Framework with Parallel Algorithms and Mesh Adaptation

J. McKee, Y. Mileyko, A. Fisher and A. Koniges

University of Hawaii, USA

10:00 am

ICCFD11-1302

A Method for Geometry-Sensitive, CFD Solver Independent Mesh Adaptation

N. Wyman, M. Mirsky, P. Galpin and T. Hansen

Cadence CFD, USA

10:30 am

ICCFD11-1303

Parametrically Uniform Mesh Adaption for Unstructured Grids

M. Lawry and M. Opgenorth

Sierra Space, USA

11:00 am

ICCFD11-1304

Automatic Boundary-Layer Adaptation of Structured Grids in VULCAN-CFD

A. Scholten, P. Paredes, F. Li, J. White, R. Baurle and M. Choudhari

NASA Langley Research Center, USA

11:30 am

ICCFD11-1305

Adaptive Mesh Refinement and Turbulence Modeling

Michael E. Olsen

NASA Ames Research Center, USA

Tuesday, July 12, 2022

14 Chair: TBD		Numerical Methods - I			Oahu Room
09:30 am – 12:00 pm	09:30 am ICCFD11-1401 <i>A Conservative Overset Method for Unstructured Grids</i> Steven Tran, and Jayanarayanan Sitaraman U.S. Army Combat Capabilities Development Command, USA	10:00 am ICCFD11-1402 <i>An Efficient Edge Based Data Structure for a Vertex Based Finite Volume Algorithm on Hybrid Unstructured Meshes</i> S. Akkurt, and M. Sahin Istanbul Technical University, Turkey	10:30 am ICCFD11-1403 <i>Analysis of Edge-Based Method on Tetrahedra for Diffusion</i> Boris Diskin, Hiroaki Nishikawa, and Yi Liu National Institute of Aerospace, USA	11:00 am ICCFD11-1404 <i>Laminar and Turbulent Behavior Captured by A 3-D Kinetic-Based Discrete Dynamic System</i> Xiaoyu Zhang, J. M. McDonough, and Huidan Yu Purdue University, USA	11:30 am ICCFD11-1405 <i>Numerical Simulations of Laminar Separated Flows Based on Compressible & Incompressible Navier-Stokes Equations for Engineering Education</i> A. Chuen, and M. Hafez University of California, Davis
	12:00 pm – 01:15 pm				
	Hosted Lunch				
	Hale Piilani Room				
	15 Chair: Cetin Kiris		Applied CFD - I		
1:15 pm – 2:45 pm	01:15pm ICCFD11-1501 <i>Characterising the Standing Wave Airflow Instability in the Print Gap of Inkjet Printers</i> A. F. V. de A. Aquino, S. G. Mallinson, G. D. McBain, G. D. Horrocks, C. M. de Silva, and T. J. Barber University of New South Wales, Australia	01:45 pm ICCFD11-1502 <i>Development of the PISALE Codebase for Simulating Flow and Transport in Large-scale Coastal Aquifer</i> Young-Ho Seo, Jonghyun Lee, Alice Koniges, and Aaron Fisher University of Hawaii, USA	02:15 pm ICCFD11-1503 <i>Simulation Methodology for Quasi-static Conjugate Heat Transfer Approach of Brake Disc</i> H.R. Balaji Wabtec India Industrial Private Limited, India		
	12:00 pm – 01:15 pm				
Hosted Lunch					
Hale Piilani Room					
16 Chair: James Coder		Shock Capturing			Molokai Room
1:15 pm – 2:45 pm	01:15 pm ICCFD11-1601 <i>Comparative Assessment of Accuracy of Shock-Capturing Schemes in Terms of Local-Truncation-Error</i> Yoonpyo Hong, Soo Hyung Park, and Kwanjung Yee Seoul National University, South Korea	01:45 pm ICCFD11-1602 <i>A Shock Capturing Sub-Filter Scale Legendre Spectral Viscosity (LSV) Closure Applied to High-Order Flux Reconstruction Schemes</i> V. C. B. Sousa, and C. Scalo Purdue University, USA	02:15 pm ICCFD11-1603 <i>Robust, Compact Shock Capturing for High-Order Navier-Stokes Simulations</i> J. G. Coder, R. Holst, and R. G. Glasby University of Tennessee – Knoxville, USA		
	12:00 pm – 01:15 pm				
Hosted Lunch					
Hale Piilani Room					

Tuesday, July 12, 2022

17 | Chair: Francois Cadieux

Numerical Methods - II

Oahu Room

1:15 pm – 2:45 pm	<p>01:15 pm ICCFD11-1701 <i>Progress in the Usage of Inexact Linearizations in Piggy-Back Iterations for Adjoint Computation</i> E. Padway National Institute of Aerospace, USA</p>	<p>01:45 pm ICCFD11-1702 <i>Improving the Performance of a Compressible RANS Solver for Low and High Mach Number Flows</i> Sabet Seraj, Anil Yildirim, Joshua L. Anibal, Joaquim R. and R. A. Martins University of Michigan, USA</p>	<p>02:15 pm ICCFD11-1703 <i>Level-Set Immersed Boundary Technique for Turbulent Flow Simulations</i> R. Boukharfane, S. Benjelloun, and M. Parsani Mohammed VI Polytechnic University, Morocco</p>		

18 | Chairs: Shishir Pandya & Christoph Brehm

Special Session

Ali'i Room

03:00 pm – 04:30 pm	<p>3:00 pm <i>Memorial Lecture for Dr. Joseph S. Shang</i> D. Gaitonde The Ohio State University, USA</p>	<p>03:30 pm ICCFD11-1802 <i>Progress Toward Realizing the CFD Vision 2030</i> John R. Chawner Cadence CFD, USA</p>	<p>4:00 pm – 5:00 pm <i>Panel Discussion</i> <i>From Joe Shang to Vision 2030: Future of CFD</i></p>		

ICCFD11 Program: Wednesday, July 13, 2022

07:30 am – 08:00 am

Speaker's Briefing

08:15 am – 09:15 am

Invited Lecture

Ali'i Room

19 | Session

ICCFD11-1901

Computational Experiments in Turbulent Flows: From Numerics to Improved Modeling

Prof. Sanjiva K. Lele
Stanford University

20 | Chair: Claudia Parisuana

Applied CFD - II

Lanai Room

09:30 am – 12:00 pm

09:30 am

ICCFD11-2001

A Time-accurate, Fast-running CFD Method for the Prediction of A Full Aircraft Flutter Boundary

H. Q. Yang, and Ben Armstrong
CFD Research Corporation, USA

10:00 am

ICCFD11-2002

UAV Icing: Simulation of Aerodynamic Performance Degradation with CFD

R. Hann
Norwegian University of Science and Technology, Norway

10:30 am

ICCFD11-2003

Application of a CFD Modeling Framework to High Energy Density Regimes

D. Eder, C. Parisuana, M. Gauthier, C. Schoenwaelder, and S. Glenzer
University of Hawaii, USA

11:00 am

ICCFD11-2004

Numerical Investigation of a Bio-Inspired Airfoil with Air-Permeable Holes

E. Tangermann, G. Ercolani, and M. Klein
Universität der Bundeswehr München, Germany

11:30 am

ICCFD11-2005

Influence of Canard on the Longitudinal and Lateral-Directional characteristics of a Delta configuration at Low Speeds

Pathanjali R.J, Praveen Kumar B, Muralidhar M, and Subhendu Saha
Aeronautical Development Agency, India

21 | Chair: Kozo Fujii

Multiphase Flows - I

Molokai Room

09:30 am – 12:00 pm

09:30 am

ICCFD11-2101

Pseudo-Boiling of Supercritical Water

R. Barney, R. McCallen, and J.P. Delplanque
Lawrence Livermore National Laboratory

10:00 am

ICCFD11-2102

All-speed Multi-phase Computational Framework for Simulating the Entire Process of Underwater Explosions: Shocks, Cavitations, and Bubble Pulsations

Kyungjun Choi, and Chongam Kim
Seoul National University, South Korea

10:30 am

ICCFD11-2103

Simulation of Cloud Cavitating Flow in a Venturi Using RANS and DES in OpenFOAM

Dhruv Apte, Mingming Ge, and Olivier Comber-Delgosha
VA Tech., USA

11:00 am

ICCFD11-2104

Moment Closure Description of Polydisperse, Polykinetic and Evaporating Liquid Sprays

T. F. Leung, and C. P. T. Groth
University of Toronto, Canada

11:30 am

ICCFD11-2105

A Polydisperse Gaussian-Moment Method for Extended Statistical Modelling of Multi-phase Flows

M. Marchildon, B. Allard, L. Ivan, and J.G. McDonald
University of Ottawa, Canada

22 | Chair: Thomas Schwartzentruber

Hypersonics - I

Oahu Room

09:30 am – 12:00 pm

09:30 am

ICCFD11-2201

Verification of Nonequilibrium Thermochemistry Models for Hypersonic CFD by First-Principles Simulation

E. Torres, T. Gross, E. Geistfeld, and T.E. Schwartzentruber
University of Minnesota, USA

10:00 am

ICCFD11-2202

Arbitrary Lagrangian Eulerian Simulations of High Speed Particle Impacts Encountered During Hypersonic Flight

Peter Yip, Erik Torres, Ioannis Nompelis, and Thomas E. Schwartzentruber
University of Minnesota, USA

10:30 am

ICCFD11-2203

Effect of Atmospheric Particulates on Hypersonic Boundary Layer Transition

J. B. Habeck, S. Melander, and G. V. Candler
U. of Minnesota, USA

11:00 am

ICCFD11-2204

Property-Preserving Limiters for Discontinuous Galerkin Discretizations of Hyperbolic Problems

D. Kuzmin
Technical University Dortmund, Germany

Wednesday, July 13, 2022

12:00 pm – 01:15 pm

Hosted Lunch

Hale Piilani Room

23 | Chair: Christoph Brehm

Cartesian Grid Methods

Lanai Room

01:15 Pm – 02:45 pm

01:15 pm
ICCFD11-2301
High-Order Cut-Cell Methods for High-Fidelity Flow Simulations
 P. T. Brady and D. Livescu
 Los Alamos National Laboratory, USA

01:45 pm
ICCFD11-2302
Comparison of LBM-RANS and LBM-VLES for 3D Taylor-Green Vortex Problems
 A. Jammalamadaka, Y. Li, R. Zhang, and H. Chen
 Dassault Space Systems, USA

24 | Chair: TBD

High-Lift Systems CFD

Molokai Room

01:15 Pm – 02:45 pm

01:15 pm
ICCFD11-2401
Fully-Automated High-Fidelity LES Around High-Lift Aircraft Configuration Near Stall
 Hiroyuki Asada and Soshi Kawai
 Tohoku University, Japan

01:45 pm
ICCFD11-2402
RANS Computations of 3D Flows Past JAXA and NASA CRM High Lift Models using Various Turbulence Models
 R. K. Agarwal and K. Hendrickson
 U. of Washington, USA

02:15 pm
ICCFD11-2403
Hybrid RANS-LES Simulations of the NASA High-Lift Common Research Model
 N. Ashton, P. Matten, and V. Skaperdas
 Amazon Web Services, UK

25 | Chair: Shishir Pandya

Multi-material Flows

Oahu Room

01:15 Pm – 02:45 pm

01:15 PM
ICCFD11-2501
Discontinuous Galerkin Methods for Multi-Material Shock Hydrodynamics
 A. Pandare, W. Li, J. Waltz, H. Luo, and J. Bakosi
 Los Alamos National Laboratory, USA

01:45 PM
ICCFD11-2502
A Moving Discontinuous Galerkin Finite Element Method with Interface Condition Enforcement for Compressible Multi-material Flows
 H. Luo, G. Absillis and R. Nourgaliv
 North Carolina State University, USA

Wednesday, July 13, 2022

	Chair: Savio Poovathingal	Ablation			Lanai Room
03:00 pm - 4:30 pm	<p>03:00 pm ICCFD11-2601 <i>Effects of Thermochemical Non-Equilibrium in the Boundary Layer of an Ablative Thermal Protection System: A State-to-State Approach</i> F. Bonelli, D. Ninni, L. D. Pietanza, G. Colonna, B. Helber, T. E. Magin, and G. Pascazio Politecnico di Bari, Italy</p>	<p>03:30 pm ICCFD11-2602 <i>Study of Effect of Equilibrium and Finite-Rate Gas-Surface Interactions on Ablation of Graphite Material in Fully-Coupled Simulation between CHAMPS and KATS Solvers</i> Aleksander L. Zibitsker, Joel A. McQuaid, Christoph Brehm, and Alexandre Martin University of Kentucky, USA</p>	<p>04:00 pm ICCFD11-2603 <i>Hinge Method for CFD and Fluid- Ablation Interaction Modeling</i> R. Fu and A. Martin University of Kentucky, USA</p>		
	Chair: Pedro Paredes	Transition Modeling			Molokai Room
03:00 pm - 4:30 pm	<p>03:00 pm ICCFD11-2701 <i>Receptivity of the BoLT-II Boundary Layer to Freestream Disturbances and Surface Roughness</i> Zachary M. Johnston, Luke J. Melander, and Graham V. Candler University of Minnesota, USA</p>	<p>03:30 pm ICCFD11-2702 <i>The Harmonic Linearized Navier-Stokes Equations for Transition Prediction in Three-Dimensional Flows</i> P. Paredes, M. Choudhari, M. Carpenter, and F. Li NASA Langley Research Center, USA</p>	<p>04:00 pm ICCFD11-2703 <i>Dynamic QSV-Based Large Eddy Simulation of Hypersonic Boundary Layer Transition Delay via an Impedance Boundary</i> V. C. B. Sousa, V. Wartemann, A. Wagner, and C. Scalo Purdue University, USA</p>		
	Chair: TBD	Direct Navier-Stokes			Oahu Room
03:00 pm - 4:30 pm	<p>03:00 pm ICCFD11-2801 <i>Direct Numerical Simulation of a Turbulent Boundary Layer Separating Over a Curved Wall Using FastRK3</i> A. B. Aithal and A. Ferrante University of Washington, USA</p>	<p>03:30 pm ICCFD11-2802 <i>Direct Numerical Simulation Of Boundary Layer Transition At Mach 6 Over An Ablative Surface Approaching A 95-Degree Compression Ramp</i> B. Vollmer, and D. J. Bodony University of Illinois, Urbana-Champaign, USA</p>	<p>04:00 pm ICCFD11-2803 <i>Direct Numerical Simulation of differentially heated cavity at low Prandtl numbers</i> J. Oder, M. Alami, L. Koloszar, W. Munter, and D. Laubeur von Karman Institute, Belgium</p>		

ICCFD11 Program: Thursday, July 14, 2022

07:30 am – 08:00 am		Speaker's Briefing			
08:15 am – 09:15 am		Invited Lecture		Ali'i Room	
29 Session		ICCFD11-2901 Recent Advances and Future Prospects for Hypersonic CFD Prof. Graham Candler University of Minnesota			
30 Chair: Jubaraj Sahu		Numerical Methods - III		Lanai Room	
09:30 am – 12:00 pm	09:30 am ICCFD11-3001 <i>An Adaptive Space-Time Hyperbolic Navier-Stokes Solver for Two-Dimensional Unsteady Viscous Flows</i> E. Padway and H. Nishikawa National Institute of Aerospace, USA	10:00 am ICCFD11-3002 <i>Time-Accurate Solution of Unsteady Flows in an Implicit Solver Using Block LUSG Method</i> M. R. Nived, Sai Saketha Chandra Athkuri, and Vinayak Eswaran Indian Institute of Technology Hyderabad, India	10:30 am ICCFD11-3003 <i>Bound-Preserving and Entropy-Stable Algebraic Flux Correction Schemes for the Shallow Water Equations with Topography</i> H. Hajduk and D. Kuzmin Technical University Dortmund, Germany	11:00 am ICCFD11-3004 <i>Advanced CFD-Based Coupled Computational Approach for Prediction of Complex Flight Behaviors</i> Jubaraj Sahu, Bradley Burchett, and Benjamin Gruenwald Oak Ridge Associated Universities, USA	11:30 am ICCFD11-3005 <i>Development of Three-Dimensional Ray Tracing Solver for Communication Blackout in Atmospheric Entries</i> Vincent F. Giangaspero, V. Sharma, S. Poedts, and A.Lani von Karmen Institute, Belgium
31 Chair: Aditya Ghate		Turbulent Flows		Molokai Room	
09:30 am – 12:00 pm	09:30 am ICCFD11-3101 <i>Dynamic Scale-Resolving Paradigm for Coarse Grained Simulations of Turbulent Mixing</i> Fernando F. Grinstein Los Alamos National Laboratory, USA	10:00 am ICCFD11-3102 <i>Direct Numerical Simulation of Turbulent Flow Using Hyperbolic Moment Methods</i> L. Ivan and W. Kaufmann Canadian Nuclear Laboratories, Canada	10:30 am ICCFD11-3103 <i>Synthesizing Turbulent Channel Flow</i> John William Poduska, Sr. Massachusetts Institute of Technology, USA	11:00 am ICCFD11-3104 <i>Development and Application of One-Equation Wilcox-Agarwal Turbulence Model for Stall Prediction</i> R. Agarwal, W. Han, Y. Wang, and L. Bai U. of Washington, USA	11:30 am ICCFD11-3105 <i>Flow Field Reconstruction for Inhomogeneous Turbulence Using Data and Physics Driven Models</i> Aditya S. Ghate, and Sanjiva K. Lele Stanford University, USA
32 Chair: Chun Tang		Hypersonics - II		Oahu Room	
09:30 am – 12:00 pm	09:30 am ICCFD11-3201 <i>Comparison and Uncertainty Assessment of CFD Codes for Hypersonic Flow Modeling</i> C. N. Onyeador, C. J. Waligura, L. Lopez, D. Hoskins, K. M. Sabo, and W. L. Harris Massachusetts Institute of Technology, USA	10:00 am ICCFD11-3202 <i>Reconstructing Arc-Jet Environments Using 2D Material Response Models</i> L.P. Askins and A. Martin University of Kentucky, USA	10:30 am ICCFD11-3203 <i>Characterization and Modeling of Spallation in Thermal Protection Systems</i> K. Price, S. Bailey, and A. Martin University of Kentucky, USA	11:00 am ICCFD11-3204 <i>A High-Order Scheme for the Numerical Simulation of High-Enthalpy Hypersonic Flows</i> D. Passiatore, L. Sciacovelli, P. Cinnella, and G. Pascazio Politecnico di Bari, Italy	11:30 am ICCFD11-3205 <i>Rapid Hypersonic Simulations Using US3D and Pointwise</i> C. Tang NASA Ames Research Center, USA

Thursday, July 14, 2022

12:00 pm – 01:15 pm

Hosted Lunch

Hale Piilani Room

33 | Chair: Derek Dalle

Uncertainty Quantification

Lanai Room

01:15 pm – 02:45 pm

01:15 pm
ICCFD11-3301
Physics-Based Regression vs. CFD for Hagen-Poiseuille and Womersley Flows and Uncertainty Quantification
 Huiru Li, Md Mahfuzul Islam, Huidan Yu and Xiaoping Du
 Indiana University–Purdue University Indianapolis, USA

01:45 pm
ICCFD11-3302
Uncertainty Quantification of Geometric Uncertainties in Aerodynamic Systems through an Adjoint Approach
 K. D. Kantanias and G. Papadakis
 Imperial College, UK

02:15 pm
ICCFD11-3303
Distribution of SLS Integrated Load Uncertainty to Surface Pressures and Sectional Loads
 Derek J. Dalle, Stuart E. Rogers, Aaron C. Burkhead and Jamie G. Meeroff
 NASA Ames Research Center, USA

34 | Chair: Luis Fernandez

Wind Turbine

Molokai Room

01:15 pm – 02:45 pm

01:15 pm
ICCFD11-3401
Deep Learning for Wake Modeling of Wind Turbines
 Suraj Pawar, Ashesh Sharma, Ganesh Vijayakumar, Christopher J. Bay, and Shashank Yellapantula
 Oklahoma State University, USA

01:45 pm
ICCFD11-3402
Analysis on the Flow Over a Vertical-Axis Wind Turbine with Varying Tip-Speed Ratio and Solidity
 Sangwoo Ahnn and Haecheon Choi
 Seoul National University, South Korea

02:15 pm
ICCFD11-3403
An Open-Source Incompressible-Flow Hybrid-Solver Framework for Massively Parallel Blade-Resolved Wind Farm Simulations Under Atmospheric Inflow
 Ashesh Sharma, Michael J Brazell, Ganesh Vijayakumar, Shreyas Ananthan, Lawrence Cheung, Marc Henry de Frahan, Paul Mullaney, Jon Rood, Philip Sakievich and Michael A. Sprague
 National Renewable Energy Laboratory, USA

35 | Chair: Leonardo Machado

Magneto-Hydro, and Solar Dynamics

Oahu Room

01:15 pm – 02:45 pm

01:15 pm
ICCFD11-3501
Discrete Exterior Calculus Based Flow Simulations on a Sphere for the Modeling of Solar Inertial Modes
 R. Ayoub, P. Jagad, R. Samtaney, J. Philidet, and L. Gizon
 King Abdullah University of Science and Technology, Saudi Arabia

01:45 pm
ICCFD11-3502
A Monolithic Face-Based Discretization of the Incompressible Magnetohydrodynamics Equations
 K. Ata, and M. Sahin
 Istanbul Technical University, Turkey

02:15 pm
ICCFD11-3503
Recent Development of Entropy Split Methods for Gas Dynamics and MHD
 H.C. Yee, and Björn Sjögreen
 NASA Ames Research Center, USA

Thursday, July 14, 2022

36 | Chair: Steve Legensky

Bio-Medical CFD

Lanai Room

03:00 pm – 04:30 pm	<p>03:00 pm ICCFD11-3601 <i>A Numerical Simulation on Hemolysis based on Power-Law Models in the FDA Benchmark Blood Pump</i> J. Choi and N. Hur Sogang Sogang University, South Korea</p>	<p>03:30 pm ICCFD11-3602 <i>Estimation of the Risk of Airborne Transmission in an Elementary School Classroom through Large Eddy Simulation</i> A. Vignolo, M. Draper, and G. Usera Universidad de la Republica, Uruguay</p>	<p>04:00 pm ICCFD11-3603 <i>Industrial and Biomedical CFD Workflows Enhanced with In Situ Knowledge Capture and Computational Steering</i> Steve M. Legensky, Earl P.N. Duque, Dave A. Amels, Brad Whitlock, Marcus Meyer, Axel Gerstenberger, and Paolo Adami Intelligent Light, USA</p>		
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37 | Chair: Timothy Chau

Unsteady CFD – I

Molokai Room

03:00 pm – 4:30 pm	<p>03:00 pm ICCFD11-3701 <i>Analysis of a Flapping Blade in Two-Phase Flow</i> A. Viljoen, W. H. Ho and D. J. Chandar University of the Witwatersrand, Johannesburg, South Africa</p>	<p>03:30 pm ICCFD11-3702 <i>Vortex Structure Analysis Method for Separated Shear Flow</i> Takuto Ogawa, Tomoaki Tatsukawa and Fujii Koza Tokyo University of Science, Japan</p>	<p>04:00 pm ICCFD11-3703 <i>Flow Characteristics of the Wandering Blade Tip Vortex</i> Young-Jin Yoon and Haecheon Choi Seoul National University, South Korea</p>		
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38 | Chair: Nathan Hariharan

Artificial Intelligence

Oahu Room

03:00 pm – 4:30 pm	<p>03:00 pm ICCFD11-3801 <i>Obstacle Location and Identification using Time Reversal and Deep Learning</i> Adar Kahana, Oded Ovadia, Eli Turkel and Dan Givoli Tel-Aviv University, Israel</p>	<p>03:30 pm ICCFD11-3802 <i>Machine Learning-Based Physics Inference from High-Fidelity Solutions: Vortical Features & Flow Separation</i> Nathan Hariharan and Jennifer N. Abras Department of Defense High Performance Computing Modernization Program, USA</p>	<p>04:00 pm ICCFD11-3803 <i>GPU-Based HPC and AI Developments for CFD</i> S. Posey, J. Luitjens and O. Hennigh Nvidia Corporation, USA</p>		
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06:30 pm – 09:30 pm

Hosted Luau

Meet in Lobby

ICCFD11 Program: Friday, July 15, 2022

07:30 am – 08:00 am		Speaker's Briefing			
08:15 am – 09:15 am		Invited Lecture		Ali'i Room	
39 Session		<p style="text-align: center;">ICCFD11-3901 Nonlinear Stability, Algorithm Optimization, and Monolithic Methods Prof. David Zingg University of Toronto</p>			
40 Chair: Bruce Crawford		Reacting Flows		Lanai Room	
09:30 am – 12:00 pm	<p>09:30 am ICCFD11-4001 <i>Multi-Resolution Analysis of Partially-Stirred Reactor Models for Subgrid Turbulence / Chemistry Interactions</i> J. Edwards, C. Rajath and A. Navratil North Carolina State University, USA</p>	<p>10:00 am ICCFD11-4002 <i>Numerical Simulation of Underwater Explosions Using Unstructured Grids</i> Lingquan Li, Rainald Löhner and Facundo Nicolas Airaud George Mason University, USA</p>	<p>10:30 am ICCFD11-4003 <i>Controlling Spatio-Temporal Evolution of Square and Rectangular Flames via Inlet Conditions</i> J. Stempka, and A. Tyliczszak Czestochowa University of Technology, Poland</p>	<p>11:00 am ICCFD11-4004 <i>Validation of the New Modeling Capabilities of the Ansys Fluent CFD High-Speed Solver for the Simulation of Supersonic Combustion in SCRAMjets and Rotating Detonation Engines</i> Bruce Crawford, Ishan Verma, Stefano Orsino, Jean-Sebastien Cagnone, and Shaoping Li Ansys, USA</p>	
	41 Chair: TBD		Multiphase - II		Molokai Room
	<p>09:30 am ICCFD11-4101 <i>Multidimensional HLLC Riemann Solver for the Eulerian Droplet Equation System</i> H. Beaugendre, T. Vigier and F. Morency National Institute for Research in Digital Science and Technology (INRIA), France</p>	<p>10:00 am ICCFD11-4102 <i>Direct Numerical Simulation of Droplet Laden Homogeneous Shear Turbulence: Numerical Method and Flow Physics</i> P. Trefftz-Posada and A. Ferrante University of Washington, USA</p>	<p>10:30 am ICCFD11-4103 <i>Droplet Formation Simulations Using Mixed Finite Element Method</i> Darsh K. Nathawani and Matthew G. Knepley The State University of New York, Buffalo, USA</p>	<p>11:00 am ICCFD11-4104 <i>Numerical Study of Particle-Particle Interactions in a High Density Supersonic Flow</i> Raghava S. G. Ravuluri, Kaveh A. Tagavi and Alexandre Martin U. of Kentucky, USA</p>	
	42 Chair: Cory Stack		Unsteady CFD - II		Oahu Room
09:30 am – 12:00 pm	<p>09:30 am ICCFD11-4201 <i>On the Simulation of Statistically Unsteady Flows with the RANS Equations</i> L. Eca, M. Kerkvliet and S. L. Toxopeus Instituto Superior Tecnico, Portugal</p>	<p>10:00 am ICCFD11-4202 <i>A Large Time Step Numerical Method for the Euler Equations using Deep Learning</i> Oded Ovadia, Adar Kahana, and Eli Turkel Tel-Aviv University, Israel</p>		<p>11:30 am ICCFD11-4204 <i>Influence of Blunt-Body Base Protuberances on Near-Wake Unsteadiness</i> C. Stack, L. Dechant, B. Robbins, Y. Zhang and K. Casper Sandia National Laboratories, USA</p>	