

# 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		
<b>01   Session</b>		<p style="text-align: center;"><b>ICCFD11-0101</b>  <b>Risks and Rewards of Multiphase Flow Simulations</b>  <i>Prof. Stéphane Zaleski</i>                      Sorbonne Université, Paris, France</p>				
<b>02   Chair: Prahalad Iyer</b>		<b>Large Eddy Simulation - I</b>		Lanai Room		
<b>09:30 am – 12:00 pm</b>	<p><b>09:30 am</b>  <b>ICCFD11-0201</b>  <i>Turbulence Development Assessment in a LES Simulation</i>                      M. Bove, G. Cazes, M. Draper and M. Mendina                      Universidad de la Republica, Uruguay</p>	<p><b>10:00 am</b>  <b>ICCFD11-0202</b>  <i>Atmospheric Boundary Layer Simulations with a LES Model Nested in a Regional Atmospheric Simulation</i>                      M. Bove, A. Vignolo, M. Mendina, G. Usera and G. Cazes                      Universidad de la Republica, Uruguay</p>	<p><b>10:30 am</b>  <b>ICCFD11-0203</b>  <i>Large Eddy Simulation of autoignition and extinction processes using Approximate Deconvolution Model</i>                      L. Caban, A. Wawrzak, A. Boguslawski and A. Tyliczszak                      Poland</p>	<p><b>11:00 am</b>  <b>ICCFD11-0204</b>  <i>Wall-modeled LES of turbulent flow over a two-dimensional Gaussian bump</i>                      Prahladh S. Iyer and Mujeeb R. Malik                      NASA Langley, USA</p>	<p><b>11:30 am</b>  <b>ICCFD11-0205</b>  <i>Evaluation of high-lift prediction capability of wall-modeled LES for a multielement 30P30N airfoil</i>                      Prahladh S. Iyer, William K. Anderson, Ponnampalam, Balakumar, Li Wang, Eric Nielsen and Mujeeb R. Malik                      NASA Langley, USA</p>	
	<b>03   Chair: Eric Ching</b>		<b>Mesh Motion and Adaptation - I</b>		Molokai Room	
	<b>09:30 am – 12:00 pm</b>	<p><b>09:30 am</b>  <b>ICCFD11-0301</b>  <i>High-order spatial and temporal approaches for overset applications and AMR grids</i>                      Dylan Jude, Jayanarayanan Sitaraman and Andrew Wissink                      Army DEVCOM, USA</p>	<p><b>10:00 am</b>  <b>ICCFD11-0302</b>  <i>Output-Based Mesh Adaptation for High-Speed Flows</i>                      James G. Coder, Benjamin L. S. Couchman, Marshall C. Galbraith, Steven R. Allmaras and Nick Wyman                      University of Tennessee Knoxville, USA</p>	<p><b>10:30 am</b>  <b>ICCFD11-0303</b>  <i>Flux reconstruction solver for arbitrarily unstructured grids with r-refinement</i>                      R. Dhib, F. Ben Ameer, R. Vandenhoeck, A. Lani and S. Poedts                      KU Leuven, Belgium</p>	<p><b>11:00 am</b>  <b>ICCFD11-0304</b>  <i>Investigating the effect of anisotropic mesh adaptation on resolving aerodynamic force coefficients for atmospheric entry simulations</i>                      D. Ekelschot and J.M. Brock                      NASA Ames, USA</p>	<p><b>11:30 am</b>  <b>ICCFD11-0305</b>  <i>Anisotropic Mesh Modifications for the Moving Discontinuous Galerkin Method with Interface Condition Enforcement for Robust Simulations of High-Speed Viscous Flows</i>                      Eric J. Ching, Andrew Kercher and Andrew Corrigan                      Naval Research Lab, USA</p>

# Monday, July 11th, 2022

04   Chair: David Zingg		Higher Order Methods - I			Maui Room
09:30 pm - 12:00 pm	<b>09:30 am</b> <b>ICCFD11-0401</b> <i>Stable and non-dissipative kinetic-energy and entropy preserving (KEEP) schemes for compressible flows</i> Y. Kuya and S. Kawai Tohoku U., Japan	<b>10:00 am</b> <b>ICCFD11-0402</b> <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 U., USA	<b>10:30 am</b> <b>ICCFD11-0403</b> <i>Stable and conservative High-Order methods on triangular elements using tensor-product summation-by-parts operators</i> T. Montoya and D. W. Zingg U. of Toronto, Canada	<b>11:00 am</b> <b>ICCFD11-0404</b> <i>Obtaining Accurate Functionals from High-Order Generalized Summation-by-Parts Discretizations in Curvilinear Coordinates</i> D.A. Craig Penner and D.W. Zingg U. of Toronto, Canada	<b>11:30 am</b> <b>ICCFD11-0405</b> <i>Assessment of a high-order implicit residual smoothing time scheme for multiblock curvilinear meshes</i> A. Bienner, X. Gloerfelt and P. Cinnella Arts et Metiers, France
	12:00 pm - 1:15 pm <b>Hosted Lunch</b>				
05   Chair: Paola Cinnella		Discrete Galerkin Methods			Lanai Room
01:15 pm - 2:45 pm	<b>01:15 pm</b> <b>ICCFD11-0501</b> <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 U. of Ottawa, Canada	<b>01:45 pm</b> <b>ICCFD11-0502</b> <i>Deneb: An Open-source High-performance Flow Solver based on DRM-DG Method</i> Hojun You, Juhyun Kim and Chongam Kim Seoul National U., S. Korea			
06   Chair: Neal Chaderjian		Rotorcraft CFD			Molokai Room
01:15 pm - 2:45 pm	<b>01:15 pm</b> <b>ICCFD11-0601</b> <i>Wake Breakdown in High-Fidelity CFD Simulations of Rotor-in-Hover: New Tools &amp; Insights</i> Nathan Hariharan, Jennifer N. Abras, and Robert Narducci HPCMP CREATE, USA	<b>01:45 pm</b> <b>ICCFD11-0602</b> <i>Optimization of Non-Conventional Airfoils for Martian Rotorcraft using Direct Numerical Simulations</i> Lidia Caros, Oliver Buxton and Peter Vincent Imperial College, UK	<b>02:15 pm</b> <b>ICCFD11-0603</b> <i>Quantitative Approach for the Accurate CFD Simulation of Hover in Turbulent Flow</i> Neal M. Chaderjian NASA Ames Research Center, USA		

# Monday, July 11, 2022

07   Chair: Scott Morton		Multidisciplinary Methods			Maui Room	
01:15 pm - 2:45 pm	<b>01:15 pm</b> <b>ICCFD11-0701</b> <i>A Multi-Physics Modeling Framework for Plasma Wind Tunnels</i> A. Munafo, V. Le Maout, S. Kumar, F. Panerai, K. Stephani, and M. Panesi U. of Illinois, Urbana-Champaign, USA	<b>01:45 pm</b> <b>ICCFD11-0702</b> <i>A Nonlinear Schur Complement Solver for CFD-Based Multidisciplinary Models</i> Anil Yildirim, Justin S. Gray, and Joaquim R. R. A. Martins U. of Michigan, USA	<b>02:15 pm</b> <b>ICCFD11-0703</b> <i>An Infrastructure for Algorithmic Flexibility in Multi-fidelity and Multi-disciplinary CFD Simulations</i> S. Morton, N. Hariharan, and D. McDaniel Army, USA			
	08   Chair: Michel Bergmann		Fluid Structure Interaction & Porosity			Lanai Room
	03:00 pm - 04:30 pm	<b>03:00 pm</b> <b>ICCFD11-0801</b> <i>Fluid-structure interaction with multi-body collision: application to collective fish swimming in an impermeable or porous enclosure</i> M. Bergmann INRIA, France	<b>03:30 pm</b> <b>ICCFD11-0802</b> <i>XCOMPUTE: Algorithms and Instruction Sequences for CFD/FEA Multi-Physics</i> G.J. Orr, R.J. Kwan and M. Doudar Xplicit Computing Inc, USA	<b>04:00 pm</b> <b>ICCFD11-0803</b> <i>Prediction of Permeability for Porous Materials Using a Surrogate Model</i> Vijay B. Mohan Ramu and Savio J. Poovathingal U. of Kentucky, USA		
09   Chair: Gerrit-Daniel Stich		Actuator Disk			Molokai Room	
03:00 pm - 04:30 pm		<b>03:00 pm</b> <b>ICCFD11-0901</b> <i>Propeller Representation in Full- Vehicle CFD: Actuator Disk Versus Body-Force Modeling Approaches</i> Tianbo Xie and Alejandra Uranga USC, USA	<b>03:30 pm</b> <b>ICCFD11-0902</b> <i>Improved Actuator Line Method For Ducted Fan Applications</i> M-A. Breault and G. Dumas Laval U., Canada University of Waterloo, Canada	<b>04:00 pm</b> <b>ICCFD11-0903</b> <i>Validation of Actuator Disk, Actuator Line and Sliding Mesh Methods within the LAVA Solver</i> Gerrit-Daniel Stich, Luis S. Fernandes, Gaetan Kenway, Jeffrey A. Housman and Cetin C. Kiris NASA Ames, USA		
	10   Chair: H. T. Hyunh		Higher Order Methods - II			Maui Room
	03:00 pm - 04:30 pm	<b>03:00 pm</b> <b>ICCFD11-1001</b> <i>Output-Based h-p Refinement Strategy with Anisotropic AMR and High-Order CENO Finite-Volume Scheme for Three-Dimensional Inviscid Flows</i> C. N. Ngigi and C. P. T. Groth U. of Toronto, Canada	<b>03:30 pm</b> <b>ICCFD11-1002</b> <i>A high-order low-dissipation Euler-Lagrange method for compressible gas-particle flows</i> Meet Patel and Jesse Capecelatro U. of Michigan, USA	<b>04:00 pm</b> <b>ICCFD11-1003</b> <i>Discontinuous Galerkin, Implicit Runge-Kutta, and Collocation Methods for Ordinary Differential Equations (or Time Stepping)</i> H. T. Hyunh NASA Glenn, 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 U., 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, 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, 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 Adaption*

J. McKee, Y. Mileyko, A. Fisher and A. Koniges  
U. of Hawaii, USA

**10:00 am**

**ICCFD11-1302**

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

N. Wyman, 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, USA

**11:30 am**

**ICCFD11-1305**

*Adaptive Mesh Refinement and Turbulence Modeling*

Michael E. Olsen  
NASA Ames, USA

# Tuesday, July 12, 2022

14   Chair: Mohammed Hafez		Numerical Methods - I			Maui Room
09:30 am – 12:00 pm	<p><b>09:30 am</b> <b>ICCFD11-1401</b> <i>A Conservative Overset Method for Unstructured Grids</i> Steven Tran, and Jayanarayanan Sitaraman Army, USA</p>	<p><b>10:00 am</b> <b>ICCFD11-1402</b> <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 Tech. U., Turkey</p>	<p><b>10:30 am</b> <b>ICCFD11-1403</b> <i>Analysis of Edge-Based Method on Tetrahedra for Diffusion</i> Boris Diskin, Hiroaki Nishikawa, and Yi Liu Nat. Institute of Aerospace, USA</p>	<p><b>11:00 am</b> <b>ICCFD11-1404</b> <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, USA</p>	<p><b>11:30 am</b> <b>ICCFD11-1405</b> <i>Numerical Simulations of Laminar Separated Flows Based on Compressible &amp; Incompressible Navier-Stokes Equations for Engineering Education</i> A. Chuen, and M. Hafez University of California, Davis</p>
12:00 pm – 01:15 pm		Hosted Lunch			
15   Chair: Cetin Kiris		Applied CFD - I			Lanai Room
1:15 pm – 2:45 pm	<p><b>01:15pm</b> <b>ICCFD11-1501</b> <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 UNSW, Australia</p>	<p><b>01:45 pm</b> <b>ICCFD11-1502</b> <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 U. of Hawaii, USA</p>	<p><b>02:15 pm</b> <b>ICCFD11-1503</b> <i>Simulation Methodology for Quasi-static Conjugate Heat Transfer Approach of Brake Disc</i> H.R. Balaji Wabtec India Industrial Private Limited, India</p>		
16   Chair: James Coder		Shock Capturing			Molokai Room
1:15 pm – 2:45 pm	<p><b>01:15 pm</b> <b>ICCFD11-1601</b> <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, S. Korea</p>	<p><b>01:45 pm</b> <b>ICCFD11-1602</b> <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</p>	<p><b>02:15 pm</b> <b>ICCFD11-1603</b> <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</p>		

# Tuesday, July 12, 2022

17   Chair: Francois Cadieux		Numerical Methods - II			Maui Room	
1:15 pm – 2:45 pm	<b>01:15 pm</b> <b>ICCFD11-1701</b> <i>Progress in the Usage of Inexact Linearizations in Piggy-Back Iterations for Adjoint Computation</i> E. Padway NIA, USA	<b>01:45 pm</b> <b>ICCFD11-1702</b> <i>Accelerating the Convergence of a Compressible RANS Solver for All Mach Numbers</i> Sabet Seraj, Anil Yildirim, Joshua L. Anibal, Joaquim R. and R. A. Martins U. of Michigan, USA	<b>02:15 pm</b> <b>ICCFD11-1703</b> <i>Level-Set Immersed Boundary Technique for Turbulent Flow Simulations</i> R. Boukharfane, S. Benjelloun, and M. Parsani Mohammed VI Polytechnic U., Morocco			
	18   Chairs: Shishir Pandya & Christoph Brehm		Special Session			Ali'i Room
	03:00 pm – 04:30 pm	<b>3:00 pm</b> <i>Memorial Lecture for Dr. Joseph S. Shang</i> D. Gaitonde The Ohio State University, USA	<b>03:30 pm</b> <b>ICCFD11-1802</b> <i>Progress Toward Realizing the CFD Vision 2030</i> John R. Chawner Cadence CFD, USA	<b>4:00 pm – 5:00 pm</b> <i>Panel Discussion</i> <i>From Joe Shang to Vision 2030: Future of CFD</i>		

# 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  
CFDRC, USA

10:00 am

ICCFD11-2002

*UAV Icing: Simulation of Aerodynamic Performance Degradation with CFD*

R. Hann  
Norwegian U. of Sci. & Tech.,  
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  
U. 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 RJ, 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 Labs, USA

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 U., S. 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 Couder-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  
U. 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  
U. of Ottawa, Canada

22 | Chair: Thomas Schwartzentruber

Hypersonics - I

Maui 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  
U. 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  
U. of Minnesota, USA

10:30 am

ICCFD11-2203

*Effect of Atmospheric Particulates on Hypersonic Boundary Layer Transition*

J. B. Habeck, L. J. 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  
TU Dortmund, Germany

# Wednesday, July 13, 2022

12:00 pm – 01:15 pm

Hosted Lunch

23   Chair: Christoph Brehm		Cartesian Grid Methods			Lanai Room
01:15 Pm – 02:45 pm	<p><b>01:15 pm</b> <b>ICCFD11-2301</b> <i>High-Order Cut-Cell Methods for High-Fidelity Flow Simulations</i> P. T. Brady and D. Livescu Los Alamos Nat. Lab., USA</p>	<p><b>01:45 pm</b> <b>ICCFD11-2302</b> <i>Comparison of LBM-RANS and LBM-VLES for 3D Taylor-Green Vortex Problems</i> A. Jammalamadaka, Y. Li, R. Zhang, and H. Chen Dassault Space Systems, USA</p>			
24   Chair: Neil Ashton		High-Lift Systems CFD			Molokai Room
01:15 Pm – 02:45 pm	<p><b>01:15 pm</b> <b>ICCFD11-2401</b> <i>Fully-automated high-fidelity LES around high-lift aircraft configuration near stall</i> Hiroyuki Asada and Soshi Kawai Tohoku University, Japan</p>	<p><b>01:45 pm</b> <b>ICCFD11-2402</b> <i>RANS Computations of 3D Flows Past JAXA and NASA CRM High Lift Models using Various Turbulence Models</i> R. K. Agarwal and K. Hendrickson U. of Washington, USA</p>	<p><b>02:15 pm</b> <b>ICCFD11-2403</b> <i>Hybrid RANS-LES Simulations of the NASA High-Lift Common Research Model</i> N. Ashton, P. Batten, and V. Skaperdas Amazon Web Services, UK</p>		
25   Chair: Shishir Pandya		Multi-material Flows			Maui Room
01:15 Pm – 02:45 pm	<p><b>01:15 PM</b> <b>ICCFD11-2501</b> <i>Discontinuous Galerkin Methods for Multi-Material Shock Hydrodynamics</i> A. Pandare, W. Li, J. Waltz, H. Luo, and J. Bakosi Los Alamos Nat. Lab., USA</p>	<p><b>01:45 PM</b> <b>ICCFD11-2502</b> <i>A Moving Discontinuous Galerkin Finite Element Method with Interface Condition Enforcement for Compressible Multi-material Flows</i> H. Luo, G. Absillis and R. Nourgaliv N. Carolina State U., USA</p>			

# Wednesday, July 13, 2022

26   Chair: Savio Poovathingal		Ablation			Lanai Room
03:00 pm – 4:30 pm	<p><b>03:00 pm</b> <b>ICCFD11-2601</b> <i>Effects of thermochemical nonequilibrium 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><b>03:30 pm</b> <b>ICCFD11-2602</b> <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 U. of Kentucky, USA</p>	<p><b>04:00 pm</b> <b>ICCFD11-2603</b> <i>Hinge Method for CFD and Fluid- Ablation Interaction Modeling</i> R. Fu and A. Martin U. of Kentucky, USA</p>		
27   Chair: Pedro Paredes		Transition Modeling			Molokai Room
03:00 pm – 4:30 pm	<p><b>03:00 pm</b> <b>ICCFD11-2701</b> <i>Receptivity of the BoLT-II Boundary Layer to Freestream Disturbances and Surface Roughness</i> Zachary M. Johnston, Luke J. Melander, and Graham V. U. of Minnesota, USA</p>	<p><b>03:30 pm</b> <b>ICCFD11-2702</b> <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, USA</p>	<p><b>04:00 pm</b> <b>ICCFD11-2703</b> <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, USA</p>		
28   Chairs: Daniel Bodony		Direct Navier-Stokes			Maui Room
03:00 pm – 4:30 pm	<p><b>03:00 pm</b> <b>ICCFD11-2801</b> <i>Direct numerical simulation of a turbulent boundary layer separating over a curved wall using FastRK3</i> A. B. Aithal and A. Ferrante U. of Washington, USA</p>	<p><b>03:30 pm</b> <b>ICCFD11-2802</b> <i>Direct Numerical Simulation Of Boundary Layer Transition At Mach 6 Over An Ablative Surface Approaching A 35-Degree Compression Ramp</i> B. Vollmer, and D. J. Bodony U. of Illinois, Urbana-Champaign, USA</p>	<p><b>04:00 pm</b> <b>ICCFD11-2803</b> <i>Direct Numerical Simulation of differentially heated cavity at low Prandtl numbers</i> J. Oder, M. Alsailani, L. Koloszar, W. Munters, and D. Laboureur VKI, 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**

*An Adaptive Space-Time Hyperbolic Navier-Stokes Solver for Two-Dimensional Unsteady Viscous Flows*

E. Padway, and H. Nishikawa  
NIA, USA

**10:00 am**

**ICCFD11-3002**

*Time-accurate solution of unsteady flows in an implicit solver using block LUSGS method*

Nived M. R., Sai Saketha Chandra Athkuri, and Vinayak Eswaran  
IIT Hyderabad, India

**10:30 am**

**ICCFD11-3003**

*Bound-preserving and entropy-stable algebraic flux correction schemes for the shallow water equations with topography*

H. Hajduk and D. Kuzmin  
TU Dortmund, Germany

**11:00 am**

**ICCFD11-3004**

*Advanced CFD-Based Coupled Computational Approach for Prediction of Complex Flight Behaviors*

Jubaraj Sahu, Bradley Burchett, and Benjamin Gruenwald  
Oak Ridge Associated Univ., USA

**11:30 am**

**ICCFD11-3005**

*Development of Three-Dimensional Ray Tracing Solver for Communication Blackout in Atmospheric Entries*

Vincent F. Giangaspero, V. Sharma, S. Poedts, and A.Lani  
VKI, Belgium

**31 | Chair: Aditya Ghate**

**Turbulent Flows**

Molokai Room

**09:30 am – 12:00 pm**

**09:30 am**

**ICCFD11-3101**

*Dynamic Scale-Resolving Paradigm for Coarse Grained Simulations of Turbulent Mixing*

Fernando F. Grinstein  
Los Alamos Nat. Lab., USA

**10:00 am**

**ICCFD11-3102**

*Direct Numerical Simulation of Turbulent Flow Using Hyperbolic Moment Methods*

L. Ivan and W. Kaufmann  
Canadian Nuclear Laboratories, Canada

**10:30 am**

**ICCFD11-3103**

*Synthesizing Turbulent Channel Flow*

John William Poduska, Sr.  
MIT/retired, USA

**11:00 am**

**ICCFD11-3104**

*Development and Application of One-Equation Viscous-Turbulence Model for Stall Prediction*

R. Agarwal, V. Han, Y. Wang, and L. Bai  
U. of Washington, USA

**11:30 am**

**ICCFD11-3105**

*Flow field reconstruction for Inhomogeneous Turbulence using data and physics driven models*

Aditya S. Ghate, and Sanjiva K. Lele  
Stanford U., USA

**32 | Chair: Chun Tang**

**Hypersonics - II**

Maui Room

**09:30 am – 12:00 pm**

**09:30 am**

**ICCFD11-3201**

*Comparison and Uncertainty Assessment of CFD Codes for Hypersonic Flow Modeling*

C. N. Onyeador, C. J. Waligura, L. Lopez, D. Hoskins, K. M. Sabo, and W. L. Harris  
MIT, USA

**10:00 am**

**ICCFD11-3202**

*Reconstructing Arc-Jet Environments Using 2D Material Response Models*

L.P. Askins and A. Martin  
U. of Kentucky, USA

**10:30 am**

**ICCFD11-3203**

*Characterization and Modeling of Spallation in Thermal Protection Systems*

K. Price, S. Bailey, and A. Martin  
U. of Kentucky, USA

**11:00 am**

**ICCFD11-3204**

*A high-order scheme for the numerical simulation of high-enthalpy hypersonic flows*

D. Passiatore, L. Sciacovelli, P. Cinnella, and G. Pascazio  
Politecnico di Bari, Italy

**11:30 am**

**ICCFD11-3205**

*Rapid Hypersonic Simulations using US3D and Pointwise*

C. Tang  
NASA Ames, USA

# Thursday, July 14, 2022

12:00 pm – 01:15 pm

**Hosted Lunch**

**33** | Chair: Derek Dalle **Uncertainty Quantification** Lanai Room

<b>01:15 pm – 02:45 pm</b>	<p><b>01:15 pm</b> <b>ICCFD11-3301</b> <i>Physics-Based Regression vs. CFD for Hagen-Poiseuille and Womersley Flows and Uncertainty Quantification</i> Huiru Li, Md Mahfuzul Islam, Huidan Yu and Xiaoping Du IUPUI, USA</p>	<p><b>01:45 pm</b> <b>ICCFD11-3302</b> <i>Uncertainty Quantification of Geometric Uncertainties in Aerodynamic Systems through an Adjoint Approach</i> K. D. Kantanias and G. Papadakis Imperial College, UK</p>	<p><b>02:15 pm</b> <b>ICCFD11-3303</b> <i>Distribution of SLS Integrated Load Uncertainty to Surface Pressures and Sectional Loads</i> Derek J. Dalle, Stuart E. Rogers, Aaron C. Burkhead and Jamie G. Meeroff NASA Ames, USA</p>	
----------------------------	--	--	--	--

**34** | Chair: Luis Fernandez **Wind Turbine** Molokai Room

<b>01:15 pm – 02:45 pm</b>	<p><b>01:15 pm</b> <b>ICCFD11-3401</b> <i>Deep Learning for Wake Modeling of Wind Turbines</i> Suraj Pawar, Ashesh Sharma, Ganesh Vijayakumar, Christopher J. Bay, and Shashank Yellapantula OK State, USA</p>	<p><b>01:45 pm</b> <b>ICCFD11-3402</b> <i>Analysis on the flow over a vertical-axis wind turbine with varying tip-speed ratio and solidity</i> Sangwoo Ahnn and Haecheon Choi Seoul National U., S. Korea</p>	<p><b>02:15 pm</b> <b>ICCFD11-3403</b> <i>An open-source incompressible flow hybrid-solver framework for massively parallel blade-resolved wind farm simulations under atmospheric inflow</i> 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 NREL, USA</p>	
----------------------------	--	---	---	--

**35** | Chair: Leonardo Machado **Magneto-Hydro, and Solar Dynamics** Maui Room

<b>01:15 pm – 02:45 pm</b>	<p><b>01:15 pm</b> <b>ICCFD11-3501</b> <i>Discrete Exterior Calculus Based Flow Simulations on a Sphere for the Modeling of Solar Inertial Modes</i> R. Ayoub, P. Jagad, R. Samtaney, J. Philidet, and L. Gizon King Abdullah U. of Science and Technology, Saudi Arabia</p>	<p><b>01:45 pm</b> <b>ICCFD11-3502</b> <i>A Monolithic Face-Based Discretization of the Incompressible Magnetohydrodynamics Equations</i> K. Ata, and M. Sahin Istanbul Tech. U., Turkey</p>	<p><b>02:15 pm</b> <b>ICCFD11-3503</b> <i>Recent Development of Entropy Split Methods for Gas Dynamics and MHD</i> H.C. Yee, and Björn Sjögren NASA Ames, USA</p>	
----------------------------	--	--	---	--

# Thursday, July 14, 2022

36   Chair: Steve Legensky		Bio-Medical CFD			Lanai Room	
03:00 pm – 04:30 pm	<b>03:00 pm</b> <b>ICCFD11-3601</b> <i>A Numerical Simulation on Hemolysis based on Power-Law Models in the FDA Benchmark Blood Pump</i> J. Choi and N. Hur Sogang University, S. Korea	<b>03:30 pm</b> <b>ICCFD11-3602</b> <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 Uruguay	<b>04:00 pm</b> <b>ICCFD11-3603</b> <i>Industrial and Biomedical CFD Workflows Enhanced with In Situ Knowledge Capture and Computational Steering</i> Steve M. Legensky and Earl P.N. Intelligent Light, USA			
	37   Chair: Timothy Chau		Unsteady CFD – I			Molokai Room
	03:00 pm – 4:30 pm	<b>03:00 pm</b> <b>ICCFD11-3701</b> <i>Analysis of a Flapping Blade in Two-Phase Flow</i> A. Viljoen, W. H. Ho and D. J. Chandar University of the Witwatersrand, S. Africa	<b>03:30 pm</b> <b>ICCFD11-3702</b> <i>Vortex Structure Analysis Method for Separated Shear Flow</i> Takuto Ogawa, Tomoaki Tatsukawa and Fujii Kozo Tokyo U. of Science, Japan			
38   Chair: Nathan Hariharan		Artificial Intelligence			Maui Room	
03:00 pm – 4:30 pm	<b>03:00 pm</b> <b>ICCFD11-3801</b> <i>Obstacle Location and Identification using Time Reversal and Deep Learning</i> Adar Kahana, Oded Ovadia, Eli Turkel and Dan Givoli Tomer, Tel-Aviv U., Israel	<b>03:30 pm</b> <b>ICCFD11-3802</b> <i>Machine Learning-Based Physics Inference from High-Fidelity Solutions: Vortical Features &amp; Flow Separation</i> Nathan Hariharan and Jennifer N. Abras CREATE, DoD High Performance Computing Nvidia, USA	<b>04:00 pm</b> <b>CCFD11-3803</b> <i>GPU-Based HPC and AI Developments for CFD</i> S. Posey, J. Luitjens and O. Hennigh Nvidia, USA			
	06:30 pm – 09:30 pm		Hosted Luau			Meet in Lobby

# ICCFD11 Program: Friday, July 15, 2022

07:30 am – 08:00 am		<b>Speaker's Briefing</b>				
08:15 am – 09:15 am		<b>Invited Lecture</b>			Ali'I Room	
<b>39   Session</b>		<b>ICCFD11-3901</b> <b>Nonlinear Stability, Algorithm Optimization, and Monolithic Methods</b> Prof. David Zingg University of Toronto				
<b>40   Chair: Bruce Crawford</b>		<b>Reacting Flows</b>			Lanai Room	
09:30 am – 12:00 pm	<b>09:30 am</b> <b>ICCFD11-4001</b> <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	<b>10:00 am</b> <b>ICCFD11-4002</b> <i>Numerical Simulation of Underwater Explosions Using Unstructured Grids</i> Lingquan Li, Rainald Löhner and Facundo Nicolas Airaudo George Mason U., USA	<b>10:30 am</b> <b>ICCFD11-4003</b> <i>Controlling spatio-temporal evolution of square and rectangular flames via inlet conditions</i> J. Stempka, and A. Tyliczszak Czestochowa U. of Technology, Poland	<b>11:00 am</b> <b>ICCFD11-4004</b> <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		
	<b>41   Chair: Alexandre Martin</b>		<b>Multiphase - II</b>			Molokai Room
	09:30 am – 12:00 pm	<b>09:30 am</b> <b>ICCFD11-4101</b> <i>Multidimensional HLLC Riemann solver for the Eulerian droplet equation system</i> H. Beaugendre, T. Vigier and F. Morency INRIA, France	<b>10:00 am</b> <b>ICCFD11-4102</b> <i>Direct numerical simulation of droplet laden homogeneous shear turbulence: numerical method and flow physics</i> P. Trefftz-Posada and A. Ferrante U. of Washington, USA	<b>10:30 am</b> <b>ICCFD11-4103</b> <i>Droplet Formation Simulations Using Mixed Finite Element Method</i> Darsh K. Nathawani and Matthew G. Knepley State U. of NY, Buffalo, USA	<b>11:00 am</b> <b>ICCFD11-4104</b> <i>Numerical Study of Particle-Particle Interactions in a High Density Supersonic Flow</i> Raghava S. Davuluri, Kaveh A. Tagavi and Alexandre Martin U. of Kentucky, USA	
		<b>42   Chair: Cory Stack</b>		<b>Unsteady CFD - II</b>		
09:30 am – 12:00 pm	<b>09:30 am</b> <b>ICCFD11-4201</b> <i>On the Simulation of Statistically Unsteady Flows with the RANS Equations</i> L. Eça, M. Kerkvliet and S. L. Toxopeus Instituto Superior Tecnico, Portugal	<b>10:00 am</b> <b>ICCFD11-4202</b> <i>A Large Time Step Numerical Method for the Euler Equations using Deep Learning</i> O. Peles, Z. J. Grant, E. Turkel and S. Gottlieb Tomer, Tel-Aviv U., Israel	<b>10:30 am</b> <b>ICCFD11-4203</b> <i>Flow characteristics of the wandering blade tip vortex</i> Young-Jin Yoon and Haecheon Choi Seoul National U., S. Korea	<b>11:30 am</b> <b>ICCFD11-4204</b> <i>Influence of Blunt-Body Base Protuberances on Near-Wake Unsteadiness</i> C. Stack, L. Dechant, B. Robbins, Y. Zhang and K. Casper Sandia Nat. Labs, USA		