36th Parallel CFD International Conference 2025

24-26 November 2025, Merida, Yucatan, Mexico

Conference Agenda

<p align="center">Session Overview</p>

Date: Monday, 24/Nov/2025

Time	Session
8:00am - 8:30am	**Registration** Location: **Centro Cultural Universitario**
8:30am - 9:00am	**Welcome** Location: **Centro Cultural Universitario**
9:00am - 10:00am	**Invited Speaker I: Quantum Lattice Boltzmann Methods** Location: **Centro Cultural Universitario** Chair: **Juan Carlos Cajas Carcia**
10:00am - 10:20am	**Coffee Break** Location: **Centro Cultural Universitario**

Time	Session A	Session B
10:20am - 11:40am	**HPC+AI-I: Convergence of Artificial Intelligence and High-Performance Computing for Computational Fluid Dynamics** Location: **Centro Cultural Universitario** **Multi-scale Transformer-based Encoding and Prediction of Turbulent Boundary Layer Flows** Rakesh Sarma, Fabian Hübenthal, Fabian Orland, Andreas Lintermann **Evaluating the Computational Performance and Accuracy of a Coupled CFD Solver-ML Workflow** Tom Hilgers, Fabian Orland, Fabian Hübenthal, Rakesh Sarma, Andreas Lintermann, Christian Terboven **Estimation of Conformation Stress Fields in Viscoelastic-Fluid Turbulence Using Deep Learning and Hybrid DNS–CNN Simulation** Eitetsu Nakashima, Ryo Araki, Takahiro Tsukahara **Algorithms of quasi-linear complexity in vortex particle method for 2D flows simulation and their GPU implementation** Evgeniya Ryatina, Ilia Marchevsky, Aleksandra Kolganova	**OT-I: Performance Improvements of Parallel Applications** Location: **Centro Cultural Universitario** Chair: **Juan Manuel Rivero** **ADAPTIVE MESH REFINEMENT FOR THE SPECTRAL-ELEMENT METHOD SIMULATIONS OF TURBULENT FLOWS** Samuel Gómez, Jordi Muela, Abel Gargallo-Peiro, Oriol Lehmkuhl **MALLEABLE COMPUTATIONAL FLUID DYNAMICS SIMULATIONS** Sergio Iserte, Guillaume Houzeaux, Petter Sandas, Antonio Peña, Marta Garcia-Gasulla **Implementation and Evaluation of Thread Overlap Method in a Real CFD Application** Takashi Soga, Takanori Uchida, Susumu Date
11:40am - 12:00pm	**Coffee Break** Location: **Centro Cultural Universitario**	
12:00pm - 1:00pm	**Atmosphere-I: High Performance Computing and AI for Atmospheric and Oceanic Flows on Exascale Computers** Location: **Centro Cultural Universitario** **INCOMPRESSIBLE FLOW SIMULATIONS WITH ALYA RUNNING FULLY ON GPUs** Herbert Owen, Guillaume Houzeaux, Yacine Olds Rouis **Adaptive mesh refinement as a pathway to including realistic radiation models in numerical simulations of the atmosphere** Yassine Tissaoui, Samuel Stechmann, Simone Marras, Hang Wang **High resolution simulations of the Earth's atmosphere on GPUs using ClimaAtmos.jl** Akshay Sridhar	**OT-II: Parallel Solvers** Location: **Centro Cultural Universitario** **A HIGH ORDER IMPLICIT COMPRESSIBLE FLOW SOLVER** Guillaume Houzeaux, Manuel Stocchi **GPU-friendly aggressive coarsening for faster AMG Poisson solvers** Àdel Alsalti-Baldellou, Artem Mavliutov, Carlo Janna
1:00pm - 2:30pm	**Lunch**	
3:00pm - 4:30pm	**Social Event: Gran Museo del Mundo Maya** Location: **Gran Museo del Mundo Maya**	

Time		
9:00am - 10:00am	**Invited Speaker II: Efficient Coupled Multiphysics Simulations Based On Hierarchical Cartesian Meshes** Location: **Centro Cultural Universitario** Chair: **Juan Carlos Cajas Carcia** **9:00am - 10:00am** **Efficient Coupled Multiphysics Simulations based on Hierarchical Cartesian Meshes** Matthias Meinke, Ansgar Niemöller, Tim Wegmann, Thede Kiwitt, Dominik Krug	
10:00am - 10:20am	**Coffee Break** Location: **Centro Cultural Universitario**	
10:20am - 11:40am	**Atmosphere-II: High Performance Computing and AI for Atmospheric and Oceanic Flows on Exascale Computers** Location: **Centro Cultural Universitario** **JEXPRESSO V0.1: A JULIA-LANGUAGE, USER-FRIENDLY, MULTI-PHYSICS PARALLEL SOLVER FOR THE SOLUTION OF CONSERVATIONS LAWS ON CPUs AND GPUs** Simone Marras, Yassine Tissaoui, Hang Wang, Sam Stechmann **Large Eddy Simulation of Offshore Wind Farms using the open source code SOD2D** Matias Avila Salinas, Herbert Owen, Oriol Lehmkuhl, Roberto Aurelio Chavez-Arroyo **Computational study of convection-driven flows in sea breeze circulation over the Yucatán peninsula** Erick Salcedo, Juan Carlos Cajas, César Treviño, Ismael Mariño-Tapia, Lorenzo Alberto Martínez-Suástegui	**OT-III: Large Scale and Industrial Applications** Location: **Centro Cultural Universitario** **Hippo: a multiphysics tool for nuclear fusion applications based on OpenFOAM and MOOSE** Matthew Falcone, Harry Saunders, Kingsley Collie, Kyle Damm, Seimon Powell, Aleksander Dubas, Andrew Davis **HIGH-FIDELITY PARTICLE-IN-CELL SIMULATIONS FOR THE SPACE CHARGE COMPENSATION OF HYDROGEN ION SOURCES** David Emerson, Benzi John, Kiran Jonathan, Olli Tarvainen, Erin Flannigan, Daniel Faircloth **3-D SIMULATION OF IGNITION IN THE HEAD VORTEX OF A REACTIVE STARTING HOT JET INTO A CH4–H2/AIR MIXTURE** Shahrzad Ghadiri, M. Razi Nalim
11:40am - 12:10pm	**Coffee Break** Location: **Centro Cultural Universitario**	
12:10pm - 1:30pm	**Biomedicine: HPC Modelling of Physiological Flows: Multi-Scale and Multi-Physics Simulations in Biomedicine** Location: **Centro Cultural Universitario** **Direct Numerical Simulations of rigid lung models** Marco Atzori, Emanuele Gallorini, Ciro Cottini, Andrea Benassi, Maurizio Quadrio **Digital Twin Models of the Human Respiratory System: A Multi-Scale Focus on the Lower AirwaysDigital Twin Models of the Human Respiratory System: A Multi-Scale Focus on the Lower Airways** hadrien calmet, Alice Novell Mazzara, Carlos Arnedo, Guillaume Houzeaux, Beatriz Eguzkitza **Blood flow simulation in a model of arterial stenosis with HPC resources** David Hernández Obín	**OT-IV: GPU-Accelerated Simulations-I** Location: **Centro Cultural Universitario** **A GPU-Accelerated Spectral Element Solver for High-Performance Moving-Mesh Simulations** José María Cela París, Abel Gargallo-Peiro, Oriol Lehmkuhl **Energy Profiling on MareNostrum 5 for Large-scale Shock Simulations with a Hybrid Riemann–Entropy Solver** Kseniya Ivanova, Jordi Muela, Oriol Lehmkuhl **On the application of an effective LBM implementation on GPU architecture for real-time simulations** Erwan ZAMORA MEDINA, Nicolas ALFEREZ, Simon MARIE **An effective comparison of CUDA .vs. OpenACC implementation of a Lattice Boltzmann kernel on multi-GPU for large scale simulations – PARCFD2025** Noureddine TAIBI, Erwan ZAMORA MEDINA, Carlos JUNQUEIRA-JUNIOR, Simon MARIE
1:30pm - 3:00pm	**Lunch**	
3:00pm - 3:30pm	**Keynote: The Evolution of Environmental Modeling in the Era of High-Performance Computing** Location: **Centro Cultural Universitario** Chair: **Juan Carlos Cajas Carcia**	
3:30pm - 3:40pm	**Short Break** Location: **Centro Cultural Universitario**	
3:40pm - 5:00pm	**HPC+AI-II: Convergence of Artificial Intelligence and High-Performance Computing for Computational Fluid Dynamics** Location: **Centro Cultural Universitario** **Drag-based route planning for urban aerial vehicles** Hojin Lee, Rishabh Puri, Rakesh Sarma, Andreas Lintermann, Sangseung Lee, Mario Rüttgers **When AI Meets Engineering Design: Constraining Its Creativity for Smarter Vehicle Aerodynamics Design** Makoto Tsubokura, Takuji Nakashima, Keigo Shimizu, Moshun Ikeda, Bisser Raytchev **TURBULENCE CONTROL VIA MODULAR MULTI-AGENT REINFORCEMENT LEARNING** Pol Suárez, Yuning Wang, Ricardo Vinuesa **Neural Network for Subgrid Turbulence Modeling on LES Simulations** Eduardo Vital Brasil Lorenzo Fernandez, Jean-Marc Gratien, Yassine Ayoun, Thibault Faney, Julien Bohbot	
7:00pm - 10:00pm	**Conference Dinner** Location: **Museo de la Gastronomía Yucateca**	

Date: Wednesday, 26/Nov/2025

9:00am **-** **10:00am**	**Invited Speaker III: High Performance Computing at UNAM: New Paradigm** Location: **Centro Cultural Universitario** Chair: **Juan Carlos Cajas Carcia**
10:00am **-** **10:20am**	**Coffee Break** Location: **Centro Cultural Universitario**

10:20am - 11:40am	
HPC+AI-III: Convergence of Artificial Intelligence and High-Performance Computing for Computational Fluid Dynamics Location: **Centro Cultural Universitario** **Airfoil Shape Optimization using Bayesian Methods** Vaishali Ravishankar, Fabian Hübenthal, Soji Mathew Jacob, Arno Feiden **Airfoil Shape Optimization via Deep Reinforcement Learning with Multi-Fidelity CFD Solvers** BEDRI YAGIZ, Oriol Lehmkuhl **DEVELOPMENT OF A GANs-BASED WALL MODEL FOR LARGE EDDY SIMULATION USING LOCAL FLOW INFORMATION** Takumi Endo, Ming Liu, Chisachi Kato, Yosuke Hasegawa **Parallel Training and Performance Evaluation of PI-DeepONet: Generalization to Inflow Boundary Conditions in 2D Channel Flow** Junya Onishi, Makoto Tsubokura	**OT-V: GPU-Accelerated Simulations-II** Location: **Centro Cultural Universitario** **An Immersed Boundary Method with Volume Fraction-Based Forcing for High-Speed Flows** Punit Pandey, Bhavya Jain, Ankit Bansal, Krishna Mohan Singh, Yannick Hoarau **DESIGN OF A PASSIVE AIR CONDITIONING SYSTEM BY MEANS OF BIDIMENSIONAL AND TRANSITORY NUMERICAL SIMULATIONS BASED ON CONTROL VOLUME SCHEMES** Juan Manuel Rivero, César Treviño **Numerical simulations of thermal fluid flow through GPU enabled legacy code** Karla Figueroa, Juan Carlos Cajas Carcia **Porting OpenFOAM on GPU via modern C++** Mayank Kumar, Jony Castagna, Mattijs Janssens, Yiyun Tan, Wendi Liu, Gavin Tabor **Flow around a rigid oscillating airfoil undergoing oscillations in pulsating currents** Juan Carlos Cajas Carcia, Carlos Rubio Tellez, Ismael Mariño, César Treviño

11:40am **-** **12:10pm**	**Closing Ceremony** Location: **Centro Cultural Universitario**