

36th Parallel CFD International Conference 2025

24-26 November 2025, Merida, Yucatan, Mexico

Conference Agenda

Session Overview

Date: Monday, 24/Nov/2025

8:00am -	Registration Location: Centro Cultural Universitario	
8:30am -	Welcome Location: Centro Cultural Universitario	
9:00am -	Invited Speaker I: Quantum Lattice Boltzmann Methods Location: CCU: Consejo Universitario Chair: Juan Carlos Cajas Garcia	
10:00am	Quantum Lattice Boltzmann Methods Matthias Möller	
10:00am -	Coffee Break Location: Centro Cultural Universitario	
10:20am -	HPC+AI-I: Convergence of Artificial Intelligence and High-Performance Computing for Computational Fluid Dynamics Location: CCU: Consejo Universitario	OT-I: Performance Improvements of Parallel Applications Location: CCU: Audiovisual
11:40am	Multi-scale Transformer-based Encoding and Prediction of Turbulent Boundary Layer Flows Rakesh Sarma , Fabian Hübenthal, Fabian Orland, Andreas Lintermann	ADAPTIVE MESH REFINEMENT FOR THE SPECTRAL-ELEMENT METHOD SIMULATIONS OF TURBULENT FLOWS Samuel Gómez , Jordi Muela, Abel Gargallo-Peiro, Oriol Lehmkuhl
	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	MALLEABLE COMPUTATIONAL FLUID DYNAMICS SIMULATIONS Sergio Iserte, Guillaume Houzeaux , Petter Sandas, Antonio Peña, Marta García-Gasulla
	Estimation of Conformation Stress Fields in Viscoelastic-Fluid Turbulence Using Deep Learning and Hybrid DNS–CNN Simulation Eitetsu Nakashima, Ryo Araki, Takahiro Tsukahara	Implementation and Evaluation of Thread Overlap Method in a Real CFD Application Takashi Soga , Takanori Uchida, Susumu Date
	Algorithms of quasi-linear complexity in vortex particle method for 2D flows simulation and their GPU implementation Evgeniya Ryatina , Iliia Marchevsky, Aleksandra Kolganova	
11:40am -	Coffee Break Location: Centro Cultural Universitario	
12:00pm -	Atmosphere-I: High Performance Computing and AI for Atmospheric and Oceanic Flows on Exascale Computers Location: CCU: Audiovisual	OT-II: Parallel Solvers Location: CCU: Consejo Universitario
1:00pm	INCOMPRESSIBLE FLOW SIMULATIONS WITH ALYA RUNNING FULLY ON GPUS Herbert Owen , Guillaume Houzeaux, Yacine Olds Rouis	A HIGH ORDER IMPLICIT COMPRESSIBLE FLOW SOLVER Guillaume Houzeaux , Manuel Stocchi
	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	GPU-friendly aggressive coarsening for faster AMG Poisson solvers Adel Alsalti-Baldellou , Artem Mavliutov, Carlo Janna
	High resolution simulations of the Earth's atmosphere on GPUs using ClimaAtmos.jl Akshay Sridhar	Flow around a rigid oscillating airfoil undergoing oscillations in pulsating currents Juan Carlos Cajas Garcia , Carlos Rubio Tellez, Ismael Mariño, César Treviño
1:00pm -	Lunch	
2:30pm -		
3:00pm -	Social Event: Gran Museo del Mundo Maya Location: Gran Museo del Mundo Maya	
4:30pm		

Date: Tuesday, 25/Nov/2025

9:00am - 10:00am	Invited Speaker II: Efficient Coupled Multiphysics Simulations Based On Hierarchical Cartesian Meshes Location: CCU: Consejo Universitario Chair: Juan Carlos Cajas Garcia 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: CCU: Audiovisual 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: CCU: Consejo 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 Shahrazad 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: CCU: Audiovisual 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 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: CCU: Consejo 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: CCU: Consejo Universitario Chair: Juan Carlos Cajas Garcia The Evolution of Environmental Modeling in the Era of High-Performance Computing Simone Marras	
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: CCU: Consejo 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

9:30am - 10:30am	Invited Speaker III: High Performance Computing at UNAM: New Paradigm Location: CCU: Consejo Universitario Chair: <u>Juan Carlos Cajas Garcia</u> High Performance Computing at UNAM: New Paradigm <u>Héctor Benítez Pérez</u>	
10:30am - 10:50am	Coffee Break Location: Centro Cultural Universitario	
10:50am - 12:10pm	HPC+AI-III: Convergence of Artificial Intelligence and High-Performance Computing for Computational Fluid Dynamics Location: CCU: Consejo Universitario Airfoil Shape Optimization using Bayesian Methods <u>Vaishali Ravishankar</u> , Fabian Hübenthal, Soji Mathew Jacob, Arno Feiden Airfoil Shape Optimization via Deep Reinforcement Learning with Multi-Fidelity CFD Solvers <u>BEDRI YAGIZ</u> , Oriol Lehmkuhl DEVELOPMENT OF A GANs-BASED WALL MODEL FOR LARGE EDDY SIMULATION USING LOCAL FLOW INFORMATION <u>Takumi Endo</u> , Ming Liu, Chisachi Kato, Yosuke Hasegawa Parallel Training and Performance Evaluation of PI-DeepONet: Generalization to Inflow Boundary Conditions in 2D Channel Flow <u>Junya Onishi</u> , Makoto Tsubokura	OT-V: GPU-Accelerated Simulations-II Location: CCU: Audiovisual Numerical simulations of thermal fluid flow through GPU enabled legacy code <u>Karla Figueroa</u> , Juan Carlos Cajas Garcia DESIGN OF A PASSIVE AIR CONDITIONING SYSTEM BY MEANS OF BIDIMENSIONAL AND TRANSITORY NUMERICAL SIMULATIONS BASED ON CONTROL VOLUME SCHEMES <u>Juan Manuel Rivero</u> , César Treviño Porting OpenFOAM on GPU via modern C++ Mayank Kumar, Jony Castagna, Mattijs Janssens, Yiyun Tan, <u>Wendi Liu</u> , Gavin Tabor
12:10pm - 12:40pm	Closing Ceremony Location: Centro Cultural Universitario	