| DAY 3 | | | | | |
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| 08:00-08:45 | Coffee break and Refreshments | | | | |
| Keynote 08:45-09:30 | Chair: Prof Manolis Gavaises, City St George's University London, UK | Min Xu, Shangai Jiao Tong University, China<br>*3D reconstruction of combustion flame temporal development* | | | |
| 09:30-10:30 | Round Table: Q&A with Industry Panel | | | | |
| 10:30-11:00 | Coffee Break, Refreshments | | | | |
| **Parallel Sessions** | **3. Optimisation and Design** | **9. Inference, Sensing, Inverse Modelling** | **12. Experimental Data** | **15. Heat Transfer** | **8. PDE Solvers** |
| Chair | Prof Kyriakos Giannakoglou, National Technical University of Athens, Greece | Prof Bernd R. Noack, Shenzhen University, China | Prof Simo Makiharju, University of California Berkeley, USA | Dr Michael Vipin, City St George's University London, UK | Prof Jean-Jacques Slotine, MIT, USA |
| ROOM | ROOM A | ROOM B | ROOM C | ROOM D | ROOM E |
| 11:00 - 11:15 | **S.3-P.6 Vladimir Krasilnikov**<br>Vladimir Krasilnikov, Benedetto Di Paolo, Emiliano Costa<br>*AI-driven optimization of hull–propeller systems using CFD and propeller design codes*<br>SINTEF Ocean AS, Department of Ships and Ocean Structures, Norway | **S.9-A.1 Sebastian Sachs**<br>Sebastian Sachs, Steffen Jung, Margret Keuper, Christian Cierpka<br>*Artificial neural networks for event-based particle tracking using STELLA*<br>Technische Universität Ilmenau, Germany | **S.12-A.1 Yuan Jia**<br>Yuan Jia, Qiao Zhang, Hao Ma, Guoqin Zhao, Chi Zhang, Chih-Yung Wen<br>*Reconciling Numerical Simulations with Wind-Tunnel Experiments in Hypersonic Flows*<br>The Hong Kong Polytechnic University, Hong Kong, China | **S.15-P.1 Giovanni Ricciardi**<br>Giovanni Ricciardi, Wilfried Edelbauer, Manolis Gavaises, Berend van Wachem<br>*Integrating Machine Learning in CFD Wall Heat Transfer Models of Impinging Jet Flows with Variable Reynolds and Prandtl Numbers*<br>AVL List GmbH, Austria | **S.8-A.7 Leonardo Boledi**<br>L. Boledi, R. Santoso, J. Poonoosamy<br>*Accelerating Reactive Transport Simulations with KAN-based Surrogate Models*<br>Forschungszentrum Jülich GmbH, Germany |
| 11:15 - 11:30 | **S.3-A.7 Tianhan Zhang**<br>Kang Hu, Jiangyang Ge, Haotian Jiang, Tianhan Zhang<br>*Autonomous Aerodynamic Design and Stability Optimization of UAVs via a Skill-Based Multi-Agent LLM Framework*<br>Beihang University, China | **S.9-A.2 Mahdi Jamshidiha**<br>M. Jamshidiha, A. Procacci, R. Amaduzzi, A. Parente, A. Coussement<br>*Bayesian Calibration of Turbulence-Chemistry for OH* Prediction in Hydrogen Combustion*<br>Université Libre de Bruxelles, Belgium | **S.12-P.2 Qinye Zhu; Yu Xiang*; Jun Zhang; Wenyong Wang**<br>Qinye Zhu, Yu Xiang, Jun Zhang, Wenyong Wang<br>*LGFNet: Local-Global Fusion Network for Multi-Source Aerodynamics*<br>School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, China | **S.15-P.2 Rémy Souan**<br>Rémy Souan, Adèle Poubeau, Thibault Fanney, Lionnel Mathelin, Anne Sergent, Christian Angelberger<br>*A Machine Learning wall function for heat transfer prediction in laminar flows at high Prandtl number*<br>IFP Energies nouvelles, 1-4 Av. du Bois Préau, 92852 Rueil-Malmaison, France | **S.8-P.8 Francis Padilla**<br>Ehsan Roohi, Francis Padilla<br>*Accelerating Kinetic Fokker-Planck simulations using a GPU-optimized deep neural network surrogate: Application to rarefied internal and hypersonic external flows*<br>UMASS Amherst, USA |
| 11:30 - 11:45 | **S.3-P.8 Youzheng Yu**<br>Youzheng Yu, Jiaqing Kou, Weiwei Zhang<br>*Generative Framework for Aerodynamic Configuration Conceptual Design*<br>Northwestern Polytechnical University, China | **S.9-P.4 Alexander Stroh**<br>Jakob Marcel Hoffmann, Yosuke Hasegawa, Alexander Stroh<br>*Predicting 4D Mitral Regurgitation Hemodynamics from Sparse Data using Hybrid Deep Operator Networks*<br>Institute of Fluid Mechanics, Karlsruhe Institute of Technology, Germany | **S.12-A.3 Semanur Kucuk**<br>Semanur Kucuk, Cosimo Della Santina, Angeliki Laskari<br>*Automated Image-Based Classification of Air Lubrication Flow Regimes Using Deep Learning*<br>Delft University of Technology, The Netherlands | **S.15-A.3 Oliver Scorsim**<br>Oliver Scorsim, Jean-Luc Borean<br>*CFD-based Reduced Order Model for Steel Cooling Application*<br>ArcelorMittal Maizieres R&D, France | **S.8-P.9 Ruihan Zhang**<br>Ruihan Zhang, Jingru Xing, Shoubao Dai, Yuanyi Wu, Shangwen Gao, Junfu Lyu, Yuxin Wu<br>*Super-Resolution Predictive Initialization Using Neural Operators for Accelerating CFD Simulations*<br>Tsinghua University, China |
| 11:45 - 12:00 | **S.3-P.9 Alfredo Lopez**<br>A. Lopez, F. Sobieczky, C. Lackner, M. Hochsteger, B. Scheichl, H. Sobieczky, C. Feichtinger<br>*A physics informed reinforcement learning framework for efficient airflow diffuser design*<br>Software Competence Center Hagenberg, Austria | **S.9-P.5 John Agyapong Boamah**<br>John A. Boamah, Ronald M. Barron, Ram Balachandar<br>*Reconstruction of Missing Velocity Fields Using Linear Modal Decomposition and Non-linear Deep Learning Approaches*<br>University of Windsor, Canada | **S.12-P.4 Zhiyu Duan**<br>Wenwen Zhao, Zhiyu Duan, Wanshu Li<br>*Multi-Fidelity Data Fusion Method for the Aerodynamic Distribution of Flight Vehicles*<br>Zhejiang University, China | **S.15-P.4 Matthew Hughes**<br>Matthew T. Hughes, Christos Markides, Matteo Bucci<br>*Reconstructing Boiling Heat Transfer and Inferring Near-Wall Hydrodynamics from High-Resolution Optical Diagnostics and Optical Flow of Nucleate Boiling*<br>University of Michigan, USA | **S.8-A.11 Mohammad Sheikholeslami**<br>Mohammad Sheikholeslami, Saeed Salehi, Wengang Mao, Håkan Nilsson, Arash Eslamdoost<br>*From Discretization to Neural Solvers: A Spectrum of Methods for the Lid-Driven Cavity Problem*<br>Chalmers University of Technology, Sweden |
| 12:00 - 12:15 | **S.3-P.10 Larissa Jeindl**<br>Larissa Jeindl, Marian Staggl, Stefan Posch<br>*Optimization with Differentiable Flow Solvers: A Comparative Study of Bayesian and Gradient-Based Methods*<br>CD Laboratory for Physics-driven Machine Learning in Industrial Applications, Graz, Austria | **S.9-A.6 Karol Bukowski**<br>*Tommaso De Maria, Samuel Ahizi, Miguel Alfonso Mendez*<br>*Data-driven modelling and state estimation of sloshing dynamics from sparse measurements: an experimental and numerical study*<br>von Karman Institute for Fluid Dynamics, Belgium | **S.12-A.5 Philipp Godbersen**<br>*Philipp Godbersen, Daniel Schanz; Andreas Schröder*<br>*PeakCNN for particle image localization: Examples, variations, and improvements*<br>*DLR, Germany* | **S.15-A.5 Jetnis Avdijaj**<br>Pratibha Biswal, Jetnis Avdijaj, Alessandro Parente, Axel Coussement<br>*Physics-Informed Reduced-Order Modeling for Temperature Prediction in Industrial Reheating Furnaces*<br>Université libre de Bruxelles, Belgium | **S.8-A.14 Kie Okabayashi**<br>Kie Okabayashi, Yuina Motozono, Kazuyuki Tanaka<br>*Time-stepping Model of Cavitation Flow around a Clark-Y11.7% Hydrofoil Trained by CFD Data*<br>The University of Osaka, Japan |
| 12:15 - 12:30 | **S.8-PO.12 Albert Pool**<br>Michael Schelling, Birger Horstman<br>*Optimisation strategies for variational quantum simulation of a battery cell model*<br>German Aerospace Center (DLR), Germany | **S.9-A.7 Jiawei Wu**<br>*Jiawei Wu, Wang Han, Lijun Yan*<br>*Geometry-Generalizable Flow Reconstruction via Implicit Neural Representations*<br>School of Astronautics, Beihang University, China | **S.12-A.1 Ruicong Wu**<br>*Ruicong Wu, Jiabin Liu, Jialei Yan, Anxin Gu*<br>*Considering the growth and flow field characteristics of wind-driven waves in current environments*<br>Harbin Institute of Technology, China | **S.11-A.7 Clemens Naumann**<br>Clemens Naumann, Christian Cierpka<br>*Exergy loss prediction in stratified thermal energy storage systems using ANNs*<br>Technische Universität Ilmenau, Germany | |
| 12:30-14:00 | Lunch (Maich restaurant) | | | | |
| Keynote 14:00-14:45 | Chair: Prof Wagdi Habashi | Charbel Farhat, Stanford University, USA<br>*Physics-Based AI for Digital Twins of Fluid Flows* | | | |
| Keynote 14:45-15:30 | | Vladimir Vanovskiy, Skolkovo Institute of Science and Technology, Russia<br>*Hybrid Modelling and Computational Graph Coarsening for Accelerated Fluid Simulation* | | | |
| 15:30-16:15 | | David Hung, Shangai Jiao Tong University, China<br>*Bridging Experiments and Simulations in the Analysis of In-cylinder Air Flow Fields using Machine Learning Techniques* | | | |
| 16:15-17:00 | Coffee break and Refreshments | | | | |
| **Parallel Sessions** | **10. Turbulence** | **4. Physics-informed models** | **7. Reinforcement Learning and Flow Control** | **2. Digital Twins** | **11. Industrial & Applied ML in Fluid Systems** |
| Chair | Prof Andreas Schröder, DLR (German Aerospace Center), Germany | Prof Chaouki Habchi, IFP Energies nouvelles (IFPEN), France | Prof Charbel Farhat, Stanford University, USA | Prof Michele Battistoni, University of Perugia, Italy | Prof Wagdi Habashi, McGill University, Canada |
| ROOM | ROOM A | ROOM B | ROOM C | ROOM D | ROOM E |
| 17:00 - 17:15 | **S.10-A.11 Chiara Calascibetta (Tianyi Li)**<br>Tianyi Li, Michele Buzzicotti, Fabio Bonaccorso and Luca Biferale<br>*Generative Diffusion Models for Turbulent Passive Scalar Fields*<br>Centre Inria d'Université Côte d'Azur, France | **S.4-A.18 Hyungmin Shin**<br>*Hyungmin Shin, Andreas Schröder*<br>*A Two-Stage Physics-Informed Neural Network for Temperature Reconstruction from Lagrangian Particle Tracking Data*<br>DLR, Germany | **S.7-A.4 Isabel Scherl**<br>Isabel Scherl, James Bercaw, Alec J. Linot<br>*Towards Developing Reduced-Order Models for Active Flow Control from Experimental Data*<br>University of Massachusetts Amherst, USA | **S.2-A.1 Sajad Salavatidezfouli**<br>Sajad Salavatidezfouli, Christoffer Hansen, Henrik Karstoft, Alexandros Iosifidis, Mahdi Abkar<br>*Data-driven generative digital twins for wind-farm flows from highly sparse measurements*<br>Aarhus University, Department of Mechanical and Production Engineering, Denmark | **S.11-A.8 Mirza Popovac**<br>M. Popovac, T. Bäuml, D. Šimić<br>*, Numerical Strategies for Improving the Accuracy of ANN-Based Surrogate Model for Airflow Predictions within Rectangular Wall-Bounded Enclosures*<br>AIT - Austrian Institute of Technology |
| 17:15 - 17:30 | **S.5-A.19 Letian Jiang**<br>Letian Jiang, Steffen J. Schmidt, Nikolaus A. Adams<br>*Physics-guided Temporal Classification of Unsteady Cavitation Stages Using Supervised Learning*<br>TUM School of Engineering and Design, Technical University of Munich, Germany | **S.2-A.2 Sebastiano Randino**<br>Sebastiano Randino; Lorenzo Schena; Emanuele Garone; Miguel Alfonso Mendez<br>*A Self-Calibrating Digital Twin for Rotor-Effective Wind-Speed Estimation and Aerodynamic-Map Identification*<br>von Karman Institute for Fluid Dynamics, Belgium | **S.7-P.5 Priyam Chakraborty**<br>Priyam Chakraborty, Prabhat Kumar Mishra, Suman Chakraborty<br>*Learning to Swim Upstream: Koopman-Physics AI for Smart Microswimmer Navigation*<br>Assistant Professor, Indian Institute of Technology Kharagpur, India | **S.2-A.3 Yves-Marie Lefebvre (Philipp Bekemeyer)**<br>Alexander Barklage, Philipp Bekemeyer, Yves-Marie Lefebvre, John Goetz<br>*Bridging the Gap between Numerical and Experimental Analysis through Machine Learning Techniques Employed in Real-Time*<br>German Aerospace Center, Germany | **S.11-A.9 Justo Matheus**<br>Justo Matheus, Francisco-Javier Granados-Ortiz<br>*Identifying Arrhythmic Conditions Through Shock Signatures in Rotary Steerable Drilling Systems*<br>SLB, Norway and University of Almeria, Spain |
| 17:30 - 17:45 | **S.18-P.7 Yanfei Li**<br>*Simulation of multi-component flash boiling sprays with data-driven vapor liquid equilibrium calculations*<br>Tsinghua University, China | **S.4-P.19 Faras Brumand-Poor**<br>Faras Brumand-Poor, Georg Michael Puntigam, Marius Hofmeister, Tim Kotte, Katharina Schmitz<br>*Physics-Informed Neural Networks for Thermohydrodynamic Modeling of Fuel Injection Pumps with Fuel-Dependent Properties*<br>RWTH Aachen University, Institute for Fluid Power Drives and Systems (ifas), Germany | **S.7-A.6 Wenzhe Cao**<br>*Wenzhe Cao, Huancheng Bai, Chao Xia, Qing Jia, Zhigang Yang;*<br>*Deep Reinforcement Learning-Based Active Flow Control for Drag Reduction of a Square-Back Ahmed Body*<br>College of Automotive and Energy Engineering, Tongji University, Shanghai, 201804, China | **S.2-P.4 Vincent Seyfried**<br>Vincent Seyfried, Andreas Radler, Johannes Brandstetter, Thomas Lichtenegger<br>*From Neural Surrogates to Neural Twins*<br>Department of Particulate Flow Modelling / Johannes Kepler University Linz, Austria | **S.11-A.10 Haohan Chen**<br>Haohan Chen, Hao Ma, Xiaojing Wu, Weiwei Zhang<br>*Multi-Agent Collaborative CAE Industrial Software Platform for Fluid Mechanics*<br>Northwestern Polytechnical University, China |
| 17:45 - 18:00 | **S.13-P.10 Lee Mortimer**<br>Lee Mortimer, Michael Fairweather<br>*Prediction of Turbophoretic Particle Transport in Wall-Bounded Turbulent Flows Using Long Short-Term Memory Neural Networks*<br>University of Leeds, UK | **S.4-A.20 Yunde Su**<br>Yunde Su, Zhenyu Zhang<br>*SIM-PINN: Segregated, Iterative, and Multi-Stage Physics-Informed Neural Network for Incompressible Flow Simulations*<br>Sichuan University, China | **S.5-A.9 Haoyan Li**<br>Haoyan Li, Alberto Procacci, Alessandro Parente, Eliott Lumet, Melanie C.Rochoux<br>*Parametric Prediction of Turbulent Flows Using a Novel Condition-guided β-variational Auto-encoder*<br>Universite Libre de Bruxelles, Belgium | **S.2-A.5 Yannick Lecomte**<br>Yannick Lecomte, Alessandro Grava, Emanuele Garone, Miguel A. Mendez<br>*Bayesian Reinforcement Twinning: A Multi-Fidelity Framework for Reciprocal Learning Between Digital Twins and Control*<br>von Karman Institute for Fluid Dynamics, Belgium | **S.11-A.11 Armand de Villeroché**<br>Armand de Villeroché, Rem-Sophia Mouradi<br>*Anchored-Branched Steady-state WInd Flow Transformer (AB-SWIFT): a metamodel for 3D atmospheric flow in urban environments*<br>CEREA, ENPC, EDF R&D, Institut Polytechnique de Paris, Ile-de-France, France |
| 18:00 - 18:15 | | **S.4-P.21 Stefan Posch**<br>Milos Babic, Franz Rohrhofer, Clemens Gößnitzer, Ricardo Novella, José Maria García-Oliver, Stefan Posch<br>*Physics-informed Neural Networks and Differentiable Chemistry for Solving the Unsteady Flamelet Equation*<br>Christian Doppler Laboratory for Physics-driven Machine Learning in Industrial Applications, Austria | | **S.7-A.7 Miguel Alfonso Mendez**<br>*Miguel Alfonso Mendez, Lorenzo Schena, Romain Poletti1*<br>*Reinforcement Twinning for Control of Transport-Dominated Systems with Partial Observations*<br>von Karman Institute for Fluid Dynamics, Belgium | **S.1-A.18 Jan Rottmayer**<br>Jan Rottmayer, Emre Özkaya, Long Chen, Nicolas R. Gauger<br>*Bayesian Neural Network Surrogates for Aerodynamic Shape Design*<br>RPTU Kaiserslautern-Landau, Germany |
| 18:15-18:30 | **Closing Remarks, Manolis Gavaises** | | | | |
| 18:30-23:00 | Farewell drinks, Gala Dinner, Cretan night & Dance (Maich) | | | | |