



3<sup>rd</sup> ERCOFTAC Workshop on  
Machine Learning for Fluid  
Dynamics



**ERCOFTAC**

European Research Community On  
Flow, Turbulence And Combustion

# 3<sup>rd</sup> ERCOFTAC Workshop on Machine Learning for Fluid Dynamics

## Conference Programme

(Last updated: 17/02/2026)



### Conference Chairs:

- **Prof. Benjamin Sanderse** – *Centrum Wiskunde & Informatica, Eindhoven University of Technology*, chair
- **Dr. Richard P. Dwight** – *Delft University of Technology*, co-chair

### Scientific Committee:

- **Prof. Ricardo Vinuesa** – *University of Michigan*
- **Prof. Nils Thuerey** – *Technical University of Munich*
- **Prof. Heng Xiao** – *University of Stuttgart*
- **Prof. Andrea Beck** – *University of Stuttgart*
- **Prof. Luca Biferale** – *University of Rome Tor Vergata*
- **Prof. Taraneh Sayadi** – *Conservatoire National Arts et Métiers*
- **Prof. Paola Cinnella** – *Sorbonne University*
- **Prof. Maria Vittoria Salvetti** – *University of Pisa*
- **Prof. Gianluca Iaccarino** – *Stanford University*
- **Dr. Romit Maulik** - *Pennsylvania State University*
- **Prof. Chris Pain** – *Imperial College London*
- **Dr. Jane Bae** – *California Institute of Technology*
- **Prof. Gianluigi Rozza** – *International School for Advanced Studies*
- **Prof. Elias Cueto** – *University of Zaragoza*
- **Prof. Angelo Iollo** – *University of Bordeaux*
- **Dr. Neil Ashton** – *NVIDIA*
- **Dr. Adrian Lozano Duran** – *California Institute of Technology*
- **Prof. Nathan Kutz** – *University of Washington*
- **Prof. Luca Magri** – *Imperial College London*
- **Dr. Daan Crommelin** – *Centrum Wiskunde & Informatica*
- **Prof. Gabriel Weymouth** – *Delft University of Technology*

### Local Organizing Committee:

- **Dr. Nguyen Anh Khoa Doan** – *Imperial College London, Delft University of Technology*
- **Dr. Bernat Font** – *Delft University of Technology*
- **Dr. Wouter Edeling** – *Centrum Wiskunde & Informatica*
- **Tyler Buchanan** – *Delft University of Technology*
- **Nada Mitrovic** – *Centrum Wiskunde & Informatica*
- **Magdalena Yates** – *ERCOFTAC*

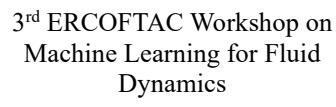


## Program at a glance

Scientific Program	Wednesday 04 March
08:30 – 09:45	Arrival and registration
09:45 – 10:00	<b>Opening – Prof. Benjamin Sanderse</b> (Turing and streamed in Euler)
10:00 – 10:50	<b>Keynote 1 - <i>Causality is 4-D for Scientific Discovery in Fluids</i>, Dr. Adrian Lozano Duran (CalTech)</b> (Turing and streamed in Euler)
10:50 – 11:30	Coffee break (Forum@CWI & Newton@CC)
11:30 – 12:30	Parallel sessions DR1 (Turing), EXP (Euler), O&D1 (L016-Hypathia), PIML 1 (L017-Ada)
12:30 – 13:40	Group picture + Lunch (Forum@CWI & Newton@CC)
13:40 – 15:20	Parallel sessions DR2 (Turing), TM-LES1 (Euler), O&D2 (L016-Hypathia), PIML 2 (L017-Ada)
15:20 – 16:00	Coffee break (Forum@CWI & Newton@CC)
16:00 – 17:40	Parallel sessions DR3 (Turing), TM-LES2 (Euler), ISI1 (L016-Hypathia), RFHT (L017-Ada)
<b>Social Program</b>	
17:45 – 20:00	Drinks reception (Forum@CWI & Newton@CC)

Scientific Program	Thursday 05 March
08:30 – 09:00	Arrival and registration
09:00 – 09:50	<b>Keynote 2 - <i>Solution discovery in fluids with high precision using neural networks</i>, Dr. Ching-Yao Lai (Stanford University)</b> (Turing and streamed in Euler)
09:50 – 10:30	Coffee break
10:30 – 12:10	Parallel sessions TM-RANS1 (Turing), DR4 (Euler), FI (L016-Hypathia), Dataset (L017-Ada)
12:10 – 13:20	Lunch (Forum@CWI & Newton@CC)
13:20 – 15:00	Parallel sessions TM-RANS2 (Turing), DR5 (Euler), Urban (L016-Hypathia), Surrogate1 (L017-Ada)
15:00 – 15:40	Coffee break (Forum@CWI & Newton@CC)
15:40 – 17:25	Parallel sessions Challenge (Turing), RL1 (Euler), Maritime (L016-Hypathia), Surrogate2 (L017-Ada)
<b>Social Program</b>	
19:00 –	Conference dinner (Tolhuistuin)

	Friday 06 March
08:30 – 09:00	Arrival and registration
09:00 – 09:50	<b>Keynote 3 - <i>Data over Dogma: Ruthless Empiricism, Strange Ideas, and the Future of Weather Forecasting</i>, Dr. Daniel Worrall (Google DeepMind)</b> (Turing and streamed in Euler)
09:50 – 10:30	Coffee break (Forum@CWI & Newton@CC)
10:30 – 12:10	Parallel sessions UQ+Q (Turing), RL2 (Euler), TM-RANS3 (L016-Hypathia), Surrogate3 (L017-Ada)
12:10 – 13:20	Lunch (Forum@CWI & Newton@CC)
13:20 – 15:00	Parallel sessions Solver (Turing), RL3 (Euler), Algo (L016-Hypathia)
15:00 – 15:30	Coffee break (Forum@CWI & Newton@CC)
15:30 – 16:20	<b>Keynote 4 – TBD, Prof. Andrea Beck</b> (Turing and streamed in Euler)
16:20 – 16:35	<b>Closure</b>



A vertical photograph of a building facade. The central feature is a large window with a dark frame divided into a grid of smaller panes. The window reflects the surrounding environment, including trees and a blue sky. To the left of the window, a brick wall is visible. Below the window, a metal railing or fence is partially visible. The overall scene is brightly lit, suggesting a sunny day.





## Detailed Program

### Day 1 (Wednesday, 4th March 2026)

- 08:30 – 09:45      Arrival and registration  
Room: Forum@CWI & Newton@CC
- 09:45 – 10:00      **Conference Opening**  
**Prof. Benjamin Sanderse (chair, Centrum Wiskunde & Informatica, Eindhoven University of Technology)**  
Room: Turing (also streamed in Euler)
- 10:00 – 10:50      **Keynote Talk:**  
**Causality is 4-D for Scientific Discovery in Fluids**  
**Dr. Adrian Lozano Duran (California Institute of Technology)**  
Room: Turing (also streamed in Euler)
- 10:50 – 11:30      Coffee break  
Room: Forum@CWI & Newton@CC
- 11:30 – 12:30      Parallel sessions (DR1, EXP, O&D1, PIML1)  
Room: Turing, Euler, L016-Hypathia, L017-Ada

	<b>Turing Dimensionality Reduction1 (DR1) Chair: Luca Magri</b>	<b>Euler Experiments (EXP) Chair: David Rival</b>	<b>L016-Hypathia Optimization &amp; Design1 (O&amp;D1) Chair: Gianluca Iaccarino</b>	<b>L017-Ada Physics-informed ML1 (PIML1) Chair:</b>
11:30- 11:50	<i>Data-driven Modeling of Chaotic Plane Couette flow on a Low- dimensional Spectral Submanifold</i> Kaszas Balint, Haller George	<i>Data driven rotor- wake dynamics: from measurements to sparse governing equations</i> Amico Enrico, Cafiero Gioacchino, Montagner Sara	<i>Deep Reinforcement Learning for Airfoil Shape Optimization: A Comparative Study of PPO and SAC</i> Bedri Yagiz, Lehmkuhl Oriol	<i>Enforcing Physics the Hard Way: On Constrained ML Architectures and Their Subtle Challenges in Fluid Dynamics</i> Cabral Manuel, Font Bernat, Weymouth Gabriel D.
11:50- 12:10	<i>Stochastic Closure for Stable Long-Time Forecasting of Chaotic Systems</i> Cayuela Marco, Sayadi Taraneh, Le Chenadec Vincent, Schmid Peter	<i>Data-Driven Modelling of Transient Flyer Aerodynamics through Wind Tunnel Measurements</i> Wastell Owen, Marxen Olaf, Iacobello Giovanni	<i>AI-Machine Learning Methodologies to Accelerate CFD-based Design and Optimization for Turbomachinery Applications</i> Shahpar Shahrokh	<i>Conformal Physics- Informed Convolutional Neural Network for Reynolds- Averaged Navier Stokes Equations in Ducts</i> Bokil Gaurav, Merbold Sebastian, De Graaf Stefanie





3<sup>rd</sup> ERCOFTAC Workshop on  
Machine Learning for Fluid  
Dynamics



**ERCOFTAC**  
European Research Community On  
Flow, Turbulence And Combustion

12:10-12:30	<i>Non-intrusive oblique-projection-based model reduction with guaranteed-stable latent-space dynamics</i> Errico Cole, Padovan Alberto, Bodony Daniel	<i>Searching for a "textbook" of gust-wing encounters</i> Olivucci Paolo, Rival David E., Srivatsan Kowshik	<i>Machine Learning-based aerodynamic optimization of a low-Reynolds-number Outlet-Guide-Vane cascade</i> Li Shuai, Andersson Niklas	<i>Video-conditioned physics-informed neural networks for predicting hidden fluid mechanics in two-phase flows</i> Dreisbach Maximilian, Kiyani Elham, Kriegseis Jochen, Karniadakis George, Stroh Alexander
-------------	---	--	--	---

12:30 – 13:45

Group picture + Lunch

Room: Forum@CWI & Newton@CC

13:40 – 15:20

Parallel sessions (DR2, TM-LES1, O&D2, PIML2)

Room: Turing, Euler, L016-Hypathia, L017-Ada

	<b>Turing Dimensionality Reduction2 (DR2) Chair: Andrea Novoa</b>	<b>Euler Turbulence Modelling-LES1 (TM-LES1) Chair: Benjamin Sanderse</b>	<b>L016-Hypathia Optimization &amp; Design2 (O&amp;D2) Chair:</b>	<b>L017-Ada Physics-informed ML2 (PIML2) Chair: Giovanni Stabile</b>
13:40-14:00	<i>A Latent Diffusion Transformer for Turbulence Generation and Data Assimilation</i> Teng Hao, Steinbrenner Fabian, Turan Baris, Xiao Heng	<i>Machine-learning wall model of large-eddy simulation across low- and high-speed flows over rough surfaces</i> Ma Rong, Lozano-Duran Adrian	<i>Fast LES-Based Geometry Optimization with Deep Reinforcement Learning and Solution Mapping</i> Sal Anglada Gaston, Lehmkuhl Oriol, Gomez Gonzales Samuel, Yagiz Bedri	<i>A Generalisable Normalisation Procedure for Physics-Informed Neural Network Training Data</i> Rawden Joshua, Vanderwel Christina, Symon Sean
14:00-14:20	<i>From Filtering to Forcing: Mimicking turbulence modeling via Data Assimilation and Machine Learning</i> Moussie Tom, Errante Paolo, Joesph Pierrie, Meldi Marcello	<i>Accelerated subgrid-scale modeling for passive scalar transport in LES of turbulent flows using data-driven methods</i> Sudhakar Surya Datta, Aditya Konduri, Lakkaraju Rajaram	<i>Efficient Thermo-Fluid System Optimization using Invariant CNNs and Parallel Active Learning</i> Koide Yuri, Kaithakkal Arjun J., Stroh Alexander, Friederich Pascal	<i>From Soft to Hard Turbulence: Architectural and Optimization Requirements of PINNs for Temperature Field Reconstruction in Rayleigh-Bénard Convection</i> Volk Marie-Christine, Mommert Michael, Bauer Christian, Sergeant Anne, Lucor Didier, Wagner Claus
14:20-14:40	<i>Efficient Real-Time Adaptation of ROMs for Unsteady Flows Using Data Assimilation</i> Zighed Ismael, Novoa Andrea,	<i>Comparison of symmetry-preserving data-driven LES closures</i> Agdestein Syver Døving, Sanderse Benjamin	<i>Multi-Objective Wind Farm Bayesian Optimisation</i> Mole Andrew, Magri Luca	<i>Physics Informed Neural networks for downscaling on irregular meshes: reliability of convergence</i>



3<sup>rd</sup> ERCOFTAC Workshop on  
Machine Learning for Fluid  
Dynamics



**ERCOFTAC**  
European Research Community On  
Flow, Turbulence And Combustion

	Magri Luca, Sayadi Taraneh			Malhomme Nemo, Stabile Giovanni
14:40- 15:00	<i>Latent-Space SINDy PDEs for Real-Time Digital Twins of Wall- Bounded Flows</i> Perez Cuadrado Miguel, Cavallazzi Giorgio Maria, Pinelli Alfredo	<i>Reinforcement- Learning-Based Wall Modeling for Turbulent Flows with Varying Pressure Gradients and Its Dependence on Subgrid-Scale Modeling</i> Bae Jane, Zhou Di	<i>Multi-Agent Reinforcement Learning for Wind Farm Optimization in Atmospheric Boundary Layer</i> Manganelli Felice, Semeraro Onofrio, Leonardi Stefano, Cherubini Stefania, De Palma Pietro	<i>Sampling and weighting enhanced Physics Informed Neural Networks for highly turbulent Rayleigh-Bénard convection</i> Mrini Soufiane, Sergent Anne, Lucor Didier, Salort Julien, Chillà Francesca
15:00- 15:20	<i>Real-time data assimilation in latent spaces for chaotic forecasting</i> Luca Magri, Özalp Elise, Novoa Andrea			<i>Weighting Physics and Data in PINNs: An Evaluation of Loss- Balancing Strategies for CFD</i> Correa Santiago, Díaz- Cuadro Christian, Draper Martín

15:20 – 16:00 Coffee break  
Room: Forum@CWI & Newton@CC

16:00 – 17:40 Parallel sessions (DR3, TM-LES2, ISI, RFHT)  
Room: Turing, Euler, L016-Hypathia, L017-Ada

	<b>Turing Dimensionality Reduction3 (DR3) Chair: Taraneh Sayadi</b>	<b>Euler Turbulence Modelling-LES2 (TM-LES2) Chair: Jane Bae</b>	<b>L016-Hypathia Inference, Sensor, and Inverse (ISI) Chair: Mahdi Abkar</b>	<b>L017-Ada Reacting Flow and Heat Transfer (RFHT) Chair:</b>
16:00- 16:20	<i>Quantized local reduced-order modelling.</i> Colanera Antonio, Magri Luca	<i>Machine-learning- based subgrid-scale modeling and its application to flows over complex geometries</i> Ahn Sangwoo, Kim Myunghwa, Choi Haecheon	<i>Estimating Rotor- Effective Wind Speed Using Synthetic LiDAR-Based Wind- Field Reconstruction</i> Draper Martín, Schlipf David, Díaz- Cuadro Christian, Correa Santiago	<i>Machine Learning Tools for Studying Laser-Induced Ignition in a Rocket Combustor</i> Iaccarino Gianluca
16:20- 16:40	<i>An explainable reduced-order model based on dynamic mode decomposition</i> Amor Christian, Corrochano Adrián, Le Clainche Soledad, Rosti Marco Edoardo	<i>Reduced Subgrid Scale Terms in Three- Dimensional Turbulence</i> Hoekstra Rik, Edeling Wouter	<i>Aerodynamic coefficients estimation from optimized surface pressure sensor distribution with multi- output Gaussian Processes Regression using wind tunnel data</i> Bucquet Quentin, Podvin Bérengère,	<i>Dynamic Chemical Reactor Network for combustion systems</i> Novelli Chiara, Procacci Alberto, Parente Alessandro



3<sup>rd</sup> ERCOFTAC Workshop on  
Machine Learning for Fluid  
Dynamics



**ERCOFTAC**  
European Research Community On  
Flow, Turbulence And Combustion

			Iavarone Salvatore, Hanna Badoui, Braud Caroline, Guilmineau Emmanuel	
16:40- 17:00	<i>Bayesian Operator Inference for Galerkin projection closure and non-intrusive Reduced- Order Modelling</i> Procacci Alberto, Iavarone Salvatore	<i>Scalable Graph Network for Robust Sub-Grid Scale Modelling for Compressible Flows</i> Gonzalez Fernando, Larroque Anthony, Theret Aurelien, Drozda Dantas Martins Luciano, Odier Nicolas, Legaux Joeffrey, Teste Olivier	<i>Smart Sensor Placement in Turbulent Flows: A Correlation- Aware Attribution Framework</i> Leung Sze Chai, Zhou Di, Bae Jane	<i>Modelling chemistry integration via deep neural networks in LES-PDF simulations of turbulent sooting flames</i> Liu Weitao, Kronenburg Andreas, Zirwes Thorsten
17:00- 17:20	<i>Proper Orthogonal Decomposition for initializing Auto- Encoders</i> Bousquet Rémi, Faucheu Alex, Nore Caroline, Lucor Didier	<i>Machine-learning- based largest-eddy simulation of turbulence and its generalisability to unseen conditions</i> Inubushi Masanobu, Satoshi Matsumoto, Susumu Goto	<i>Remember to "forget": overcoming the ill conditioned inverse problem in chaos by information theory</i> Fung Lloyd	<i>Physics-Informed Reduced-Order Modeling of Combustion Dynamics via Gaussian Process Regression and Data Assimilation</i> Lopez Constanza, Procacci Alberto, Podvin Bérengère, Iavarone Salvatore
17:20- 17:40	<i>Reduced order model- based deep learning for flow prediction</i> Fiorini Camilla, Lepage Nicolas, Mortazavi Iraj, Beneddine Samir, Thome Nicolas, Sipp Denis			<i>Data-driven modeling of hypersonic flows in chemical non- equilibrium with catalytic surfaces</i> Sarras Konstantinos, Magin Thierry, Schmid Peter, Sayadi Taraneh

17:45 – 20:00

Drinks reception

Room: Forum@CWI & Newton@CC





## Day 2 (Thursday, 5<sup>th</sup> March 2026)

- 08:30 – 09:00      Arrival and registration  
Room: Forum@CWI & Newton@CC
- 9:00 – 9:50        **Keynote Talk:**  
**Solution discovery in fluids with high precision using neural networks**  
**Dr. Ching-Yao Lai (Stanford University)**  
Room: Turing (also streamed in Euler)
- 9:50 – 10:30      Coffee break  
Room: Forum@CWI & Newton@CC
- 10:30 – 12:10     Parallel sessions (TM-RANS1, DR4, FI, Dataset)  
Room: Turing, Euler, L016-Hypathia, L017-Ada

	<b>Turing Turbulence Modelling-RANS1 (TM-RANS1) Chair: Ali Eidi</b>	<b>Euler Dimensionality Reduction4 (DR4) Chair: Angello Iollo</b>	<b>L016-Hypathia Feature Identification (FI) Chair: Anh Khoa Doan</b>	<b>L017-Ada Dataset Chair:</b>
10:30-10:50	<i>CFD-driven symbolic regression of RANS transition models</i> Zemmour Louenas, Cinnella Paola, Gloerfelt Xavier	<i>Physics Informed Graph Neural Networks for Nonlinear Dynamics</i> Calandriello Gennaro, Romor Francesco, Stabile Giovanni	<i>Weak Dominant Balance: A robust method for identifying structure in more complex fluid flows</i> Ahnert Samuel, Lagemann Esther, Bae Jane, Vinuesa Ricardo, Lagemann Christian, Brunton Steven	<i>BCN16-HFWind: A High-Fidelity LES Dataset and its Application to Data-Driven Urban Flow Predictions</i> Duró Josep Maria, Mestres Ernest, Hernández Fabian, Calafell Joan, Lehmkuhl Oriol, Rodriguez Ivette
10:50-11:10	<i>Adjoint-Assisted CFD-Driven Symbolic RANS Modeling via Kolmogorov-Arnold Networks</i> Siddiqui Affan, Tian Renzhi, Dwight Richard	<i>A Reduced Order Model for predicting the dynamics of the Rayleigh-Taylor Instability</i> Granger Téo, Briard Antoine, Creusy Paul, Gréa Benoît-Joseph	<i>Feature Extraction from Complex Flow Fields: a Morphing-based Approach under Geometric Variability</i> Margheritti Riccardo, Semeraro Onofrio, Quadrio Maurizio, Boracchi Giacomo	<i>A Blended Wing Body Aircraft Dataset and Surrogate Model for Aerodynamic Predictions</i> Sung Nicholas, Spreizer Steven, Elrefaie Mohamed, Jones Matthew, Ahmed Faez
11:10-11:30	<i>Data-driven correction of a RANS-predicted turbulent heat flux applied to high-order CFD</i> Clément Levillain, Lodato Guido	<i>Low-dimensional representation of intermittent geophysical turbulence with statistics-informed convolutional autoencoders</i> Foldes Raffaello,	<i>Sweep events characterization through LSTM network</i> Saccaggi Enrico, Zaza Domenico, Iovieno Michele, Mendez Miguel Alfonso, Di Cicca Gaetano Maria	<i>Benchmarking State-of-the-Art Machine Learning Models on the DrivAerNet++ Dataset</i> Elrefaie Mohamed



3<sup>rd</sup> ERCOFTAC Workshop on  
Machine Learning for Fluid  
Dynamics



**ERCOFTAC**  
European Research Community On  
Flow, Turbulence And Combustion

		Camporeale Enrico, Marino Raffaele		
11:30- 11:50	<i>Data-driven turbulence modelling in hypersonic flows using sparse symbolic regression</i> Calvi Paul, Gloerfelt Xavier, Breil Jérôme, Olazabal Marina, Cinnella Paola	<i>Reduced state space approach to identifying precursors to extreme events in turbulent flows</i> Kevin Schuurman, Dwight Richard, Doan Anh Khoa	<i>Predicting the linear instability eigenspectra using Deep Learning</i> Sánchez-Domínguez Miguel, De Vicente Javier, Lacasa Lucas, Chávez-Módena Miguel, Padilla-Montero Iván, Rodríguez Daniel, Valero Eusebio	<i>Identification of optimal training data for non-intrusive model reduction via operator inference</i> Rosenberger Henrik, Sanderse Benjamin, Stabile Giovanni
11:50- 12:10	<i>Correcting Differential Reynolds Stress Models Using Data-Assimilation</i> Farro Gianmarco, Content Cédric, Volpiani Pedro, Sipp Denis	<i>A physics-based and theoretically proven precursor of extreme events with covariant Lyapunov vectors</i> Consonni Riccardo, Magri Luca	<i>Neural operator-based Global Stability and Resolvent Analysis</i> Wang Chengyun, Chen Liwei, Thuerey Nils	<i>Intelligent sampling for scientific model discovery: Learning to optimize and optimizing to learn</i> Larrañaga Ana, Fasel Urban, Brunton Steven L.

12:10 – 13:20

Lunch

Room: Forum@CWI & Newton@CC

13:20 – 15:00

Parallel sessions (TM-RANS2, DR5, Urban, Surrogate1)

Room: Turing, Euler, L016-Hypathia, L017-Ada

	<b>Turing Turbulence Modelling-RANS2 (TM-RANS2) Chair: Heng Xiao</b>	<b>Euler Dimensionality Reduction5 (DR5) Chair: Gianluigi Rozza</b>	<b>L016-Hypathia Urban Flow (Urban) Chair: Maria Vittoria Salvetti</b>	<b>L017-Ada Surrogate Modelling1 (Surrogate1) Chair: Antonio Colanera</b>
13:20 - 13:40	<i>Coupling data assimilation and machine learning to improve the Spalart Allmaras turbulence model for transonic flows</i> Carduner Louis, Fanizza Bartolomeo, Volpiani Pedro Stefanin, Renac Florent, Sipp Denis	<i>MOREDDPM - DDPMs for Non-intrusive Reduced-order Modeling of Parametric Fluid Flows</i> Nikken Michiel, Botteghi Nicolò, Califano Federico, Glas Silke	<i>Urban Digital Twins at City Scale: Coupling High-Fidelity CFD with Uncertainty-Aware Machine Learning</i> Kokkinakis Ioannis, Christakis Nicholas, Drikakis Dimitris	<i>Discretization Invariant Neural Field Surrogates for Large-Scale Aerodynamic Simulation</i> Catalani Giovanni, Bertrand Xavier, Tost Frédéric, Bauerheim Michaël, Morlier Joseph
13:40 - 14:00	<i>Using Field Inversion Machine Learning to model the Reynolds Stress Tensor in the SU2 RANS flow solver</i> Boxho Margaux, Goffart Nicolas, Toulorge Thomas	<i>Optimal transport-based reduced order modeling for two-phase flows</i> Khamlich Moaad, Tonicello Niccolò, Pichi Federico, Rozza Gianluigi	<i>Meta-Learning Enhanced Physics-Informed Neural Networks for Predicting Urban Canyon Wind Flows</i> Antonioni Nestoras, Laakkonen Janne, Mouzourides Petros,	<i>Towards foundation surrogate model for flow fields around wings</i> Yang Yunjia, Thuerey Nils



			Neophytou Marina, Hautamäki Ville	
14:00 - 14:20	<i>Data-Driven Correction of RANS Models for Urban Flow Prediction via Data Assimilation and Machine Learning</i> Rosellini Matteo, Ursetto Aurora, Tavazzi Pietro, Mariotti Alessandro, Stabile Giovanni, Salveti Maria Vittoria	<i>Latent-Space Model Predictive Control for Partially-Observable High-Dimensional Systems</i> Marra Luigi, Semeraro Onofrio, Mathelin Lionel, Meilán-Vila Andrea, Discetti Stefano	<i>Towards predicting urban flows with GAVI and SHRED</i> Eiximeno Benet, Miró Arnau, Duró Josep Maria, Kutz J. Nathan, Lehmkuhl Oriol, Rodriguez Ivette	<i>Lossless Domain Mapping for Learning CFD Fields across Geometries</i> Tamburini Emanuele, Cinnella Paola, Belme Anca-Claudia
14:20 - 14:40	<i>Bayesian inversion of RANS turbulence models in Flow-MRI</i> Namuroy Claire, Kontogiannis Alexand ros, Juniper M.P.	<i>Predictive reduced order models of unsteady chaotic flows using transformer architecture</i> Taneja Kashish, Sayadi Taraneh, Mortazavi Iraj	<i>Neural Physics: Using machine-learning- libraries to build a differentiable physics- based solver applied to urban flows</i> Heaney Claire, Chen Boyang, Pain Christopher	<i>Machine-Learning- Based Surrogate Modeling for Stochastic Multiscale Simulation Methodology</i> Kim Changho, Xu Zihan, Nonaka Andrew, Zhu Yuanran
14:40 - 15:00	<i>Field-Inversion and Machine-Learning- Assisted Correction of the Compressible RANS Equations: Application to Shock- Wave/Turbulent Boundary-Layer Interactions</i> Fanizza Bartolomeo, Volpiani Pedro Stefanin, Renac Florent, Sipp Denis	<i>Generalization capabilities of Transformers in fluid dynamics</i> Ifaistos Theofanis, Nastorg Matthieu, Menier Emmanuel, Charpiat Guillaume, Schoenauer Marc	<i>Reflection-Equivariant Graph Neural Networks for Predicting Wind Loads on Buildings</i> Vargiomezis Themisto klis, Kanatsoulis Charilaos, Gorle Catherine	

15:00 – 15:40

Coffee break

Room: Forum@CWI & Newton@CC

15:40 – 17:25

Parallel sessions (Challenge, RL1, Maritime, Surrogate2)

Room: Turing, Euler, L016-Hypathia, L017-Ada



3<sup>rd</sup> ERCOFTAC Workshop on  
Machine Learning for Fluid  
Dynamics



**ERCOFTAC**

European Research Community On  
Flow, Turbulence And Combustion

	<b>Turing Data Challenge (Challenge) Chair: Tyler Buchanan</b>		<b>Euler Reinforcement Learning1 (RL1) Chair:</b>	<b>L016-Hypathia Maritime application (Maritime) Chair: Bernat Font</b>	<b>L017-Ada Surrogate Modelling2 (Surrogate 2) Chair: Dider Lucor</b>
15:40- 16:00	<i>CYPHER machine learning challenge 2025: a community effort for data-driven turbulent combustion modeling</i> Lorenzo Piu, Lapenna Pasquale, Bottari Stefano, Osseily Tamara, Baffetti Tommaso, Indelicato Giuseppe, Shigematsu Kosuke, Tocilla Albina, Kazani Jonid, Attili Antonio, Parente Alessandro	15:40- 16:00	<i>Controlling Mode Transitions in Rotating Detonation Engines using Deep Reinforcement Learning</i> Holme Kristian, Rabault Jean, Vinuesa Ricardo, Mortensen Mikael	<i>Machine Learning approaches to predict shape sensitivities for ship hulls</i> Arian Maram Moloud, Bletsos Georgios, Schwarz Henning, Palm Michael, Rung Thomas	<i>IGM: A physics-informed deep learning model for large-scale ice-sheet flow</i> Gregov Thomas, Rosier Sebastian, Finley Brandon, Vieli Andreas, Jouvet Guillaume
16:00- 16:10	<i>FluidsBench: A benchmark for the next generation of Computational Fluid Dynamics AI models</i> Neil Ashton, Paola Cinnella, Astrid Walle, Jean Kossaifi, Hohannes Brandstetter, Richard Dwight	16:00- 16:20	<i>Deep Reinforcement Learning for Active Control of Vortex-Induced Vibrations</i> Alhussein Hussam, Font Bernat, Daqaq Mohammed	<i>Predicting pressure distributions on surface ship hulls using boundary graph neural networks</i> Jena Sankalp, Weymouth Gabriel, Lidtko Artur, Coraddu Andrea	<i>Downscaling simulation dynamics for regional weather forecasting</i> Jackaman James, Celledoni Elena
16:10- 16:25	<i>Presentation of the Turbulence Modelling Challenge</i> Tyler Buchanan	16:20- 16:40	<i>Deep reinforcement learning for heat transfer control in turbulent convection</i> Zhou Zisong, Zhu Xiaojue	<i>Prediction of ship hydrodynamic resistance with artificial neural networks</i> Lefkiou Christoforos, Koukouvini Phoevos (Foivos), Chatzis Sotirios	<i>Proof of Concept of a Real-Time Fluid Dynamics Model for Immersive Environments Using Artificial Intelligence</i> Laot Titouan, Marchal Antoine, Perrot Vincent
16:25- 16:40	<i>Towards a machine learning-augmented one-equation turbulence model for external aerodynamics in open-source framework</i> Di Fabbio Tony, Segalerba Eric, Guerrero Rivas Joel Enrique	16:40- 17:00	<i>Reinforcement Learning for Complex Flows Modelling</i> Helal Isa, Giauque Alexis, Corre Christophe, Sauret Emilie		
16:40- 16:55	<i>Data-Driven RANS Closures Using Adaptive Curvature Classifier for Vortex Flows</i>				



3<sup>rd</sup> ERCOFTAC Workshop on  
Machine Learning for Fluid  
Dynamics



**ERCOFTAC**

European Research Community On  
Flow, Turbulence And Combustion

	Buchanan Tyler, West Alastair, Dwight Richard				
16:55- 17:10	<i>Symbolic Turbulence Modelling with Multi- Agent Reinforcement Learning</i> Tan Zing Shawn, Eidi Ali, Buchanan Tyler, Dwight Richard P.				
17:10- 17:25	<i>Towards a unified turbulence model through multi-objective learning</i> Wang Haochen, Liu Zhuoran, Zhao Zhuolin, Xiao Heng				

19:00 –

Conference dinner (walk-in from 19:00, dinner starts at 19:30)  
Tolhuistuin, IJpromenade 2, 1031 KT Amsterdam  
<https://maps.app.goo.gl/qaDZKEc9fTU6NnpC8>





## Day 3 (Friday, 6<sup>th</sup> March 2026)

- 08:30 – 09:00      Arrival and registration  
Room: Forum@CWI & Newton@CC
- 9:00 – 9:50        **Keynote Talk:**  
**Data over Dogma: Ruthless Empiricism, Strange Ideas, and the Future of Weather Forecasting**  
**Dr. Daniel Worrall (Google DeepMind)**  
Room: Turing (also streamed in Euler)
- 9:50 – 10:30      Coffee break  
Room: Forum@CWI & Newton@CC
- 10:30 – 12:10     Parallel sessions (UQ+Q, RL2, TM-RANS3, Surrogate3)  
Room: Turing, Euler, L016-Hypathia, L017-Ada

	<b>Turing Uncertainty Quantification and Quantum (UQ+Q) Chair: Richard Dwight</b>	<b>Euler Reinforcement Learning2 (RL2) Chair: Kamila Zdybal</b>	<b>L016-Hypathia Turbulence Modelling-RANS3 (TM-RANS3) Chair: Paola Cinnella</b>	<b>L017-Ada Surrogate Modelling3 (Surrogate3) Chair: Wouter Edeling</b>
10:30- 10:50	<i>A Surrogate-Informed Sparse Grid Interpolation for Uncertainty Quantification and Sensitivity Analysis of Complex Flows</i> Salvetti Maria Vittoria, Rosellini Matteo, Fruzza Filippo, Mariotti Alessandro, Tamellini Lorenzo	<i>Viscoelastic Turbulent Channel Drag Reduction via Opposition Control Using Multi-Agent Reinforcement Learning</i> Sharma Udit, Beneitez Miguel, Wittberg Lisa Prah, Mirjalili Shahab, Vinuesa Ricardo, Tammisola Outi	<i>Development of a RANS Local Pressure- Gradient Closure for Transition Modeling</i> Capel Jorquera Javier, Cardesa José Ignacio, Pascal Lucas, Chávez- Módena Miguel, Valero Eusebio, González Leo Miguel	<i>Toward generative surrogate models of hydrodynamic instabilities and turbulent mixing</i> Thévenin Sébastien, Sterbentz Dane, Korner Kevin, Haberstich Cécile, Briard Antoine, Gréa Benoît-Joseph, Nadiga Balasubramany a T., Schill William, Belof Jonathan L.
10:50- 11:10	<i>Shape generative models with LDDM's flow conditional matching: an application to uncertainty quantification in hemodynamics</i> Romor Francesco, Caiazzo Alfonso, Katz Sarah	<i>Wall-to-Flow: GAN- Assisted Deep Reinforcement Learning for Turbulent Flow Control from Sparse Wall Measurements</i> Cavallazzi Giorgio Maria, Perez Cuadrado Miguel, Pinelli Alfredo	<i>Generalizable Graph Neural Operators for Field Inversion Based RANS Corrections</i> Stumpo Leonardo, Ferrero Andrea, Masseni Filippo, Pastrone Dario	<i>Flow-based generative modeling of turbulent channel flow fields</i> Aerts Frederik, Nuyens Dirk, Meyers Johan
11:10- 11:30	<i>Shape-informed surrogate modeling and applications to data assimilation and graph neural networks</i> Caiazzo Alfonso,	<i>Reinforcement learning for autonomous observation in optical velocimetry</i> Zdybal Kamila,	<i>Multi-Fidelity Data- Driven Modeling, Reynolds Number Extrapolation, and a log(Re) Solution to the Turbulence Problem</i>	<i>Temporal coherency in high-resolution 3D neural PDE surrogates</i> Luca Guastoni, Thuerey Nils



3<sup>rd</sup> ERCOFTAC Workshop on  
Machine Learning for Fluid  
Dynamics



**ERCOFTAC**  
European Research Community On  
Flow, Turbulence And Combustion

	Romor Francesco, Goubergrits Leonid, Galarce Felipe, Brüning Jan	Mucignat Claudio, Lunati Ivan	Li Jiaqi, Huang George, Kunz Robert, Yang Xiang	
11:30- 11:50	<i>Solving nonlinear differential equations with quantum computers and a Fokker-Planck embedding</i> Ahmed Osama, Tennie Felix, Magri Luca		<i>Data-Driven Turbulence Modeling using Coarse-Grid Nonlinear Super- Stencils with Wall Functions</i> Lyu Shiyu, Wang Zhong-Nan	<i>Neural Operators For Accelerating Flow Field Predictions in a 2D Compressor Cascade</i> Xavier Alan, Renson Ludovic
11:50- 12:10	<i>Learning a Surrogate Quantum Circuit for the Collision Operator in the Lattice Boltzmann Method</i> Lacatus Monica, Möller Matthias		<i>Learning a Heat-Flux Closure for Jet-in- Crossflow Using Indirect Data</i> Zhao Zhuolin, Wang Haochen, Xiao Heng	<i>ML-based correction of coarse CFD simulations for turbomachinery flows</i> Tschisgale Silvio, Eichenhardt Timo, Kempe Tobias

12:10 – 13:20

Lunch

Room: Forum@CWI & Newton@CC

13:20 – 15:00

Parallel sessions (Solver, RL3, Algo)

Room: Turing, Euler, L016-Hypathia

	<b>Turing Solver Chair: Alexis Giauque</b>	<b>Euler Reinforcement Learning3 (RL3) Chair: Bernat Font</b>	<b>L016-Hypathia Algorithms (Algo) Chair: Luca Guastoni</b>
13:20- 13:40	<i>Accelerating Numerical Simulations in CFD by Model Reduction and Scientific Machine Learning</i> Rozza Gianluigi	<i>SINDy-RL: Interpretable and Efficient Model-Based Reinforcement Learning</i> Zolman Nicholas, Lagemann Christian, Fasel Urban, Kutz J. Nathan, Brunton Steven L.	<i>Gaussian Artificial Entropy viscosity via machine Learning sensor</i> Limonchi Samuel, Rodriguez Ivette, Lehmkuhl Oriol
13:40- 14:00	<i>Acceleration of an AMG pressure solver using graph neural networks</i> Eric Chillon, Lidtke Artur, Doan Nguyen Anh Khoa, Font Bernat	<i>Improvement turbulence control through explainable deep learning</i> Beneitez Miguel, Cremades Andrés, Guastoni Luca, Vinuesa Ricardo	<i>An octree-based sampling algorithm for processing big simulation data</i> Geise Janis, Spinner Sebastian, Weiner Andre
14:00- 14:20	<i>diffSPH: Differentiable Smoothed Particle Hydrodynamics for Adjoint Optimization and Machine Learning</i> Winchenbach Rene, Thuerey Nils	<i>Transfer learning strategies for accelerating reinforcement-learning- based flow control</i> Saeed Salehi	<i>Stabilizing PDE-ML systems with applications to fluid dynamics</i> Stinis Panos, Howard Amanda, Ahmed Shady, Qadeer Saad



3<sup>rd</sup> ERCOFTAC Workshop on  
Machine Learning for Fluid  
Dynamics



**ERCOFTAC**

European Research Community On  
Flow, Turbulence And Combustion

14:20-14:40	<i>Interpretable and differentiable fluid flow solvers in latent spaces with operator learning</i> Arzani Amirhossein	<i>Gradient-enhanced reinforcement learning for fluid flow control using differentiable simulations</i> Mokbel Sajeda, Lagemann Christian, Lagemann Esther, Brunton Steven	
14:40-15:00	<i>Bridging Physics and Learning: End-to-End and Residual-Based Optimization in Differentiable Solvers</i> Saverio Luca, Bucci Michele Alessandro, Content Cédric, Sipp Denis		

- 15:00 – 15:30      Coffee break  
Room: Forum@CWI & Newton@CC
- 15:30 – 16:20      **Keynote Talk:**  
**TBD**  
**~~Prof. Andrea Beck (University of Stuttgart)~~**  
Room: Turing (also streamed in Euler)
- 16:20 – 16:35      **Closing remark**