

Computational Physics
and Applications

Wednesday, October 1, 2025

8:45 AM - 9:15 AM	Registration and Coffee 2
9:15 AM - 9:30 AM	Welcome on behalf of the IOP and structure of the day 2, Dr Eloisa Bentivegna, IBM
9:30 AM - 10:00 AM	A brief introduction to Physics Enhancing Machine Learning, Dr Marta Varela, St George's University of London
	Lightning Talks – Session I day 2
10:00 AM - 10:07 AM	<u>A Comparative Evaluation of Physics-informed Neural Network Architectures for Glucose Modelling in Type 1 Diabetes</u> Harshith Yerraguntla
10:07 AM - 10:14 AM	<u>A physics-enabled graph neural network for characterising cardiac electrophysiology from electrode measurements</u> Annie Ching-En Chiu, Imperial College London
10:14 AM - 10:21 AM	<u>Bridging PINNs and KANs to Handle Noisy Partial Differential Equations</u> Siddhi Zanwar, PES University
10:21 AM - 10:28 AM	<u>Learning Exchange-Correlation Functionals via Differentiable Density Functional Theory</u> Antonius Freiherr Von Strachwitz, University Of Oxford
10:28 AM - 10:35 AM	<u>Machine-learning enhanced Density Functional Theory: Learning Exchange-Correlation from Data</u> Karim Kacper Alaa El-din, University Of Oxford
10:35 AM - 10:42 AM	<u>openCARP-PINNs: Towards Faster Prediction of Cardiac Signals Propagation</u> Balvinder Dhillon, Queen Mary University of London
10:42 AM - 10:49 AM	<u>Emulating CO Line Radiative Transfer with Deep Learning</u> Shiqi Su, University Of Leicester
10:50 AM - 11:20 AM	Coffee Break 2
	Lightning Talks – Session II day 2
11:21 AM - 11:28 AM	<u>AutoEmulate: Accelerating large-scale simulations with AI</u> Marjan Famili, The Alan Turing Institute
11:28 AM - 11:35 AM	<u>Sequential data assimilation using nudging particle filter</u>

	<u>Maneesh Kumar Singh, Imperial College London</u>
11:35 AM - 11:42 AM	<u>K-space Interpolation using Deep Koopman Autoencoders</u> <u>Wassim Ben Salah, King's College London</u>
11:42 AM - 11:49 AM	<u>Solving inverse problems of epoxy hardening with physics-informed neural networks.</u> <u>Dr. Kateryna Morozovska, KTH Royal Institute of Technology</u>
11:49 AM - 11:56 AM	<u>A Variational approach to Physics Informed Neural Network for Stochastic Partial Differential Equations</u> <u>Robbie Slos, UGent</u>
11:56 AM - 12:03 PM	<u>Transforming physics-informed machine learning to convex optimization (Online)</u> <u>Letian Yi, The Hong Kong University of Science and Technology (Guangzhou)</u>
12:03 PM - 1:00 PM	Lunch and networking 2
1:00 PM - 1:30 PM	Early career training session IOPP: Peer-review and publication ethics
1:30 PM - 2:15 PM	<u>Keynote, Frederik De Ceuster, Leuven Gravity Institute, KU Leuven – 30 mins + 15 mins for questions</u>
2:15 PM - 3:00 PM	<u>Invited Talk on Real-world applications of PEML (30 minutes + 15 mins for question):</u> <u>Carlos Peña Monferrer, SimZero</u>
3:00 PM - 3:30 PM	Coffee & Tea 2
3:30 PM - 4:15 PM	<u>Keynote, Payel Das, University of Surrey – 30 mins + 15 mins for questions</u>
4:15 PM - 5:00 PM	<u>Keynote, Miles Cranmer, University of Cambridge, DAMTP & Institute of Astronomy – 30 mins + 15 mins for questions</u>
5:00 PM - 6:00 PM	<u>Special Session - Daniel Smith, EPSRC: unpacking the long-term AI for science opportunities</u>

Space and Climate	Thursday, October 2, 2025
8:45 AM - 9:15 AM	Registration and Coffee 3
9:15 AM - 9:30 AM	Welcome on behalf of the IOP and structure of the day 3, Dr Alice Cicirello, University of Cambridge
9:30 AM - 10:00 AM	A brief introduction to Physics Enhancing Machine Learning, Dr Alice Cicirello, University of Cambridge
	Lightning Talks – Session I day 3
10:00 AM - 10:07 AM	<u>A perspective on fluid mechanical environments for challenges in reinforcement learning</u> Shruti Mishra
10:07 AM - 10:14 AM	<u>AI-driven Drifter Placement for Ocean Currents</u> Rui-Yang Zhang, Lancaster University
10:14 AM - 10:21 AM	<u>Identification of Time-Varying Modal Parameters in Offshore Wind Turbines</u> Melisa Bozaci University Of Cambridge
10:21 AM - 10:28 AM	<u>Multi-fidelity learning for physical system predictions</u> Paolo Conti, The Alan Turing Institute
10:28 AM - 10:35 AM	<u>Optimizing hp-Variational Physics Informed Neural Networks for real-world applications using the FastVPINNs framework</u> Divij Ghose, Imperial College London
10:35 AM - 10:42 AM	<u>Physics-Guided Graph Inference for District Heating Networks</u> Keivan Faghih Niresi, École Polytechnique Fédérale de Lausanne (EPFL)
10:42 AM - 10:49 AM	<u>HypeMARL: Multi-agent reinforcement learning for high-dimensional, parametric, and distributed systems</u> Nicolò Botteghi, Politecnico Di Milano
10:50 AM - 11:20 AM	Coffee Break (30 minutes) day 3
	Lightning Talks – Session II day 3
11:21 AM - 11:28 AM	<u>Neural Operators for Accelerating Flow Field Predictions</u> Alan Xavier, Imperial College London
11:28 AM - 11:35 AM	<u>A Surrogate Modelling Framework for the Correction of Structural Bias in SatelliteCloud Property Retrievals</u> Iarla Boyce, University Of Cambridge

11:35 AM - 11:42 AM	<u>Deep reinforcement learning for wall-bounded turbulent flows via wall measurements</u> Giorgio Maria Cavallazzi, City St. George's, University Of London
11:42 AM - 11:49 AM	<u>Design Optimisation of Locally Resonant Metamaterials under Uncertainty</u> Niccolo Klinger, University of Cambridge
11:49 AM - 11:56 AM	<u>Physics-enhanced Simulation-Based Inference: Likelihood-free MCMC via Normalizing Flows and Variational Autoencoders</u> Andrea Manzoni, Politecnico Di Milano
11:56 AM - 12:03 PM	<u>Reduced order modeling with shallow recurrent decoder networks</u> Matteo Tomasetto, Politecnico Di Milano
12:03 PM - 1:00 PM	Lunch and networking 3
1:00 PM - 1:30 PM	Early career training session IOPP: maximising visibility and impact of your work
1:30 PM - 2:15 PM	<u>Keynote, Simon Driscoll, University of Cambridge – 30 mins + 15 mins for questions</u>
2:15 PM - 3:00 PM	<u>Real-world applications of PEML (30 minutes + 15 mins for question), Shiva Babu, Rolls-Royce</u>
3:00 PM - 3:30 PM	Coffee & Tea 3
3:30 PM - 4:15 PM	<u>Keynote, Anh Khoa Doan, TU Delft, Faculty of Aerospace Engineering – 30 mins + 15 mins for questions</u>
4:15 PM - 5:00 PM	<u>Invited Talk on Real-world applications of PEML (30 minutes + 15 mins for question): Jean Kossaifi, NVIDIA</u>
5:00 PM - 6:00 PM	Town Hall for IOP's new AI & Machine Learning Special Interest Group

Mechanics and Materials	Friday, October 3, 2025
8:45 AM - 9:15 AM	Registration and Coffee
9:15 AM - 9:30 AM	Welcome on behalf of the IOP and structure of the day, Dr Alice Cicirello, University of Cambridge
9:30 AM - 10:00 AM	A physics-informed ML recipe book, Dr Daniel Pitchforth, University of Sheffield
	Lightning Talks – Session I
10:00 AM - 10:07 PM	<u>System Parameter Identification with Partial Knowledge via Interpretable Hyperparameter Optimisation</u> Nathan Hinchliffe University Of Sheffield
10:07 AM - 10:15 AM	<u>A Physics-Informed GAN-ResNet Framework for Imbalanced Rotor Fault Diagnosis,</u> Yang Fang, Shanghai Jiao Tong University
10:15 AM - 10:22 AM	<u>Hybrid models for Active Noise Reduction</u> Matt Bryan, Cambridge University
10:22 AM - 10:29 AM	<u>Towards Fast and Interpretable Physics-Informed Learning: Second-Order Neurons and Mixed-Activation Networks</u> João Böger, Dtu
10:29 AM - 10:36 AM	<u>Vanishing Stacked-Residual PINN for State Reconstruction of Hyperbolic Systems,</u> Katayoun Eshkofti, Kth Royal Institute Of Technology
10:36 AM - 10:43 AM	<u>DNN–LSTM-Based Surrogate Modeling and Load Identification for Helicopter Rotor Blades</u> Ye Wei, Shanghai Jiao Tong University, Shanghai
10:43 AM - 10:50 AM	<u>Physics-Aware Interpolation of Microstructures with Descriptor-Conditioned Generative Models</u> Felix Mett
10:50 AM - 11:20 AM	Coffee Break
	Lightning Talks – Session II
11:21 AM - 11:28 AM	<u>On the use of VAE for ecomaterial selection with applications in structural and aircraft design optimization</u> Joseph Morlier, Isae-supero
11:28 AM - 11:35 AM	<u>Modelling a MDOF Beam with Harmonically Coupled Modes using Lagrangian Neural Networks,</u> Alan Xavier, Imperial College London

11:35 AM - 11:42 AM	<u>Multi-Fidelity Neural Network for Predicting Frictional Nonlinear Dynamic System Performance</u> Peiyu Wang, University Of Southampton
11:42 AM - 11:49 PM	<u>Physics Guided Neural Surrogates for Microstructure Prediction in Directed Energy Deposition (DED) of Inconel 718</u> Alireza Fadavi Boostani, Georgia Institute of Technology
11:49 AM - 11:56 PM	<u>Physics-Informed Neural Networks for Nonlinear Structural Dynamics</u> Hassaan Idrees, IMT Lucca
11:56 AM - 12:03 PM	<u>Self-Adaptive Physics-informed Neural Networks with Reduced Modeling and Basis Updating for Structural Damage Identification</u> Rui Zhang, ETH zurich
12:03 PM - 1:00 PM	Lunch and networking
1:00 PM - 1:30 PM	Early career training session IOPP: Choosing the right journal and writing your paper
1:30 PM - 2:15 PM	<u>Keynote, Olga Fink, EPFL – 30 mins + 15 mins for questions</u> Olga Fink, EPFL
2:15 PM - 3:00 PM	<u>Invited Talk on Real-world applications of PEML (30 minutes + 15 mins for question):</u> Mattia Montanari, PhysicsX
3:00 PM - 3:30 PM	Coffee & Tea
3:30 PM - 4:15 PM	<u>Keynote, Maarten Schoukens, Eindhoven University of Technology – 30 mins + 15 mins for questions</u> Maarten Schoukens, Eindhoven University Of Technology
4:15 PM - 5:00 PM	<u>Real-world applications of PEML (30 minutes + 15 mins for question): Keith Butler, UCL</u> Dr Keith Butler, Ucl
5:00 PM - 6:00 PM	Special Session 1