

Workshop I: Multi-Fidelity Methods for Fusion Plasma Physics

Monday March 23, 2026

- 8:00 *Session Chair: Frank Jenko*
- 8:00–8:55 *Check-in/Breakfast (hosted by IPAM)*
- 8:55–9:00 *Welcome and Opening Remarks*
- 9:00–9:45 **Victor Artigues** (Max-Planck-Institut)
Plasma Turbulence in TensorFlow: Reduced Models and Optimization
- 10:00–10:15 *Break*
- 10:15–11:00 **Elizabeth Qian** (Georgia Institute of Technology)
Multifidelity control variates for supervised learning
- 11:15–11:30 *Break*
- 11:30–12:15 **Amanda Howard** (Pacific Northwest National Laboratory)
Multifidelity, domain decomposition, and stacking for improving training for physics-informed networks
- 12:15–2:30 *Lunch (on your own)*
- 2:30 *Session Chair: Elizabeth Qian*
- 2:30–3:15 **Kentaro Hara** (Stanford University)
Multi-fluid, high-order moment models for partially ionized plasmas
- 3:30–4:00 *Break*
- 4:00–4:45 **Bryan Reuter** (Sandia National Laboratories)
Enhancing Particle-Based Kinetic Methods Through Multifidelity Discretizations
- 5:00–5:15 *Lightning Poster Round*
- 5:15–6:30 *Poster Session & Reception (Hosted by IPAM)*

Tuesday March 24, 2026

- 8:00 *Session Chair: Amanda Howard*
- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:45 **Ben Zhu** (Columbia University)
A multi-fidelity approach in boundary plasma modeling
- 10:00–10:15 *Break*

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- 10:15–11:00 **George Holt** (UK Atomic Energy Authority)
Machine Learning Acceleration of Tokamak Scrape-Off Layer Modelling
- 11:15–11:30 *Break*
- 11:30–12:15 **Philipp Ulbl** (Max Planck Institute for Plasma Physics)
Multi-fidelity simulations of turbulence in the plasma edge and scrape-off layer
- 12:15–2:30 *Lunch (on your own)*
- 2:30 *Session Chair: Frank Jenko*
- 2:30–3:15 *Discussion*
- 3:30–4:00 *Break*
- 4:00–4:45 *Discussion*

Wednesday March 25, 2026

- 8:00 *Session Chair: Emily Belli*
- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:45 **Gabriele Merlo** (Max Plank Institute for Software Systems)
Multi-fidelity approach to the multiscale nature of plasma turbulence in stellarators
- 10:00–10:15 *Break*
- 10:15–11:00 **David Hatch** (University of Texas at Austin)
Bridging the pedestal gap: intermediate-fidelity models for pedestal transport
- 11:15–11:30 *Break*
- 11:30–12:15 **Alex Gorodetsky** (University of Michigan)
Beyond hierarchies: generalized structural exploitation in multi-fidelity sampling and learning
- 12:15–12:20 *Group Photo*
- 12:20–2:30 *Lunch (on your own)*
- 2:30 *Session Chair: Emily Belli*
- 2:30–3:15 **Maximilian Ruth** (University of Texas at Austin)
A Statistical Magnetohydrodynamic Equilibrium Model
- 3:30–4:00 *Break*
- 4:00–4:45 *Discussion*

Thursday March 26, 2026

- 8:00 *Session Chair: Alex Gorodetsky*
- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:45 **Anirban Chaudhuri** (UT Austin Oden Institute)
Multifidelity surrogates and decision-making for digital twins
- 10:00–10:15 *Break*
- 10:15–11:00 **Ammar Hakim** (Princeton Plasma Physics Lab)
On Constructing Numerical Schemes for a Hierarchy of Fusion Plasma Problems
- 11:15–11:30 *Break*
- 11:30–12:15 **Scott Parker** (University of Colorado Boulder)
Blobby turbulence and sheath models for estimating the heat load at the divertor plate
- 12:15–2:30 *Lunch (on your own)*
- 2:30 *Session Chair: George Holt*
- 2:30–3:15 **Genia Vogman** (Lawrence Livermore National Laboratory)
Characterizing anomalous transport in pulsed power with continuum kinetic simulations and reduced transport models
- 3:30–4:00 *Break*
- 4:00–4:45 **Tomo-Hiko Watanabe** (Nagoya University)
Multi-scale turbulence and isotope effects on the trapped electron mode

