



Wednesday November 12, 2025

Session Chair: Xueqiao Xu

8:30-9:15	Invited: Nanyi Zheng ♦ University of Delaware A Semi-Lagrangian Adaptive Rank (SLAR) Method for High-dimensional Vlasov Dynamics
9:15-10:00	Invited: Kentaro Hara ♦ Stanford University Sequential data assimilation for plasma dynamics
10:00-10:30	Break

Session Chair: Ionut Farcas

10:30-11:00	Xishuo Wei ♦ University of California Irvine The low-dimensional representation of Quasi-Helical stellarator geometry
11:00-11:30	Gijs Derks ♦ Dutch Institute for Fundamental Energy Research On the validation of dynamic models for (exhaust) control in Nuclear Fusion; a comparison to experiments in the TCV tokamak
11:30-12:00	Byung Kyu Na ♦ Max Planck Institute for Plasma Physics Structure-preserving hybrid MHD-drift kinetic code for simulations of wave-particle interactions
12:00-12:30	Haotian Chen ♦ Peking University Geometry effects on zonal flow dynamics and turbulent transport in optimized stellarators
12:30-14:00	Lunch break

Session Chair: Genia Vogman

14:00-14:30	Andrew Christlieb ♦ Michigan State University Adaptive rank solutions for quantum Boltzmann models
14:30-15:00	Sining Gong ♦ Michigan State University A Conservative Adaptive-Rank Approach for Wigner-Poisson Equations
15:00-15:30	Peiyi Chen ♦ University of Wisconsin Madison Control a Uniformly Magnetized Plasma with an External Electric Field
15:30-16:00	Uri Shumlak ♦ University of Washington Exploring Kinetic Physics of Multi-Species Burning Plasmas: Atomic and Nuclear Reaction Effects
16:00-16:30	Break
16:30-17:50	Poster Presentations
18:00-20:00	Banquet at Grand Ballroom of Wedgewood's University Club

Thursday November 13, 2025

Session Chair: Jingwei Hu

8:30-9:15	Invited: Micol Bassanini ♦ École Polytechnique Fédérale de Lausanne Advanced IMEX time integration for the two-fluid model of tokamak edge turbulence
9:15-10:00	Invited: Justin Angus ♦ Lawrence Livermore National Laboratory High-performance collisional implicit particle-in-cell methods for fully kinetic simulations of dynamically compressing plasmas
10:00-10:30	Break

Session Chair: Zhihong Lin

10:30-11:00	Ayumi Takano / Tomohiko Watanabe ♦ Nagoya University Field-aligned spectral method for simulation of ballooning mode turbulence
11:00-11:30	Golo Wimmer ♦ Los Alamos National Laboratory An Efficient Solver for Finite Element-based Constrained Transport in Magnetohydrodynamics
11:30-12:30	William Tang ♦ Princeton Plasma Physics Laboratory John Dawson Award Plenary AI, Machine Learning, & High-Performance Computing Enabled Scientific Discovery <i>William M. Tang is awarded the 2025 ICNSP John Dawson Award for his seminal contributions and leadership in high-performance numerical simulation of plasmas, including the growing area of artificial intelligence and machine learning for accelerating scientific discovery in plasma physics.</i>
12:30-14:00	Lunch break

Session Chair: Justin Angus

14:00-14:30	Jingwei Hu ♦ University of Washington Structure-Preserving Particle Method for Collisional Plasmas
14:30-15:00	Logan Tate Meredith ♦ Sandia National Laboratory Stochastic Numerical Heating in Collisional Electrostatic Particle-in-Cell Methods
15:00-15:30	D. C. Barnes ♦ Coronado Consulting New Darwin energy-conserving PIC algorithm
15:30-16:00	Jean-Luc Vay ♦ Lawrence Berkeley National Laboratory Energy-preserving coupling of explicit particle-in-cell with Monte Carlo collisions
16:00-16:30	Optional trip to Laguna Beach
16:30-19:00	Sunset on the beach and dinner on your own

Friday November 14, 2025

Session Chair: Frank Jenko

8:30-9:15	Invited: Yao Zhou ♦ Shanghai Jiao Tong University Nonlinear magnetohydrodynamic simulations of stellarator plasmas
9:15-10:00	Invited: Ionut Farcas ♦ Virginia Tech Advancing predictive capabilities in fusion plasmas through data-driven learning
10:00-10:30	Break

Session Chair: Tomohiko Watanabe

10:30-11:00	Luis Chacon ♦ Los Alamos National Laboratory A scalable multidimensional fully implicit solver for Hall magnetohydrodynamics
11:00-11:30	Alexandra Dudkovskaia ♦ University of York Dynamic mode decomposition for gyrokinetic eigenmode analysis in electromagnetic fusion plasmas
11:30-12:00	Xueqiao Xu ♦ Lawrence Livermore National Laboratory ABOUND SciDAC: Advancing Boundary Plasma Dynamics through Physics, High-Performance Computing, and AI Integration
12:00-12:30	Frank Jenko ♦ Max Planck Institute for Plasma Physics Advancing Fusion Research Through Predictive Simulations and Digital Twins
12:30-14:00	Lunch break

Session Chair: Andrew Christlieb

14:00-14:30	Nami Li ♦ Lawrence Livermore National Laboratory From Edge Turbulence to Magnetic Quenching: Universal Dynamics of Zonal Fields
14:30-15:00	John Zaris ♦ University of Colorado Numerically Simulating Laser Cooling of Large Trapped Ion Crystals for Quantum Sensing
15:00-15:30	Qi Tang ♦ Georgia Institute of Technology Super-particle dynamics for the Vlasov-Poisson system through a Hamiltonian-preserving closure
15:30-16:00	Andrew Ho ♦ Lawrence Livermore National Laboratory Parameterized model of microinstability-driven anomalous transport informed by GPU-accelerated Vlasov simulations

Poster Presentations on Wednesday November 12, 2025

1. Frida Brogren ♦ Gothenburg University ♦ π -PIC: a toolbox for particle-in-cell simulations in Python
2. Shiping Zhou ♦ Michigan State University ♦ A deterministic particle method for the relativistic Landau equation
3. F. Alejandro Padilla-Gomez ♦ Michigan State University ♦ Quantum Kinetic Modeling of KEEN waves in a Warm-Dense regime
4. Carolyn Wendeln ♦ Michigan State University ♦ High-Order Numerical Methods for Magnetohydrodynamic Turbulence
5. Takashi Shiroto ♦ Nagoya University ♦ Radiative transfer equation in dynamical plasmas and its structure-preserving scheme
6. Janghoon Seo ♦ Korea Institute of Fusion Energy ♦ Nonlinear Fokker-Planck Collision for Discontinuous Galerkin Method
7. Atsushi Fukuyama ♦ Kyoto University ♦ Kinetic Full Wave Analyses in Inhomogeneous Plasmas Using Plasma Kernel Functions
8. Ilon Joseph ♦ Lawrence Livermore National Laboratory ♦ A Tale of Two Polarization Paradoxes: The Diamagnetic Polarization and Spitzer Polarization Paradoxes
9. Zhe Bai ♦ Lawrence Berkeley National Laboratory ♦ FTL: Transfer learning nonlinear plasma dynamic transitions in low dimensional embeddings via deep neural networks
10. Hamad El Kahza ♦ University of Delaware ♦ Adaptive-Rank Implicit Time Integrators with Application to Nonlinear Fokker-Planck Kinetic Models and Advection-Diffusion Equations with Variable Coefficients
11. Kentaro Hara ♦ Stanford University ♦ Fluid Moment Modeling of Partially Ionized, Low Temperature Plasmas
12. Ethan Green ♦ University of California Irvine ♦ Energetic particle transport under the effects of the radial electric field in LHD
13. Young Dae Yoon ♦ Asia Pacific Center for Theoretical Physics ♦ Kinetic instabilities beget three-dimensional magnetic reconnection and induce MHD-scale changes
14. Ben Zhu ♦ Lawrence Livermore National Laboratory ♦ Stellarator Boundary Simulations with BSTING
15. Zhihong Lin ♦ University of California Irvine ♦ Zonal flows: from Hasegawa-Mima equation to gyrokinetic simulation
16. Gahyung Jo ♦ Korea Institute of Fusion Energy ♦ A derivative-free approach for extraction of plasma equilibrium features in free-boundary problem
17. Sehoon Ko ♦ Korea Institute of Fusion Energy ♦ Comparison on Characteristics between Flux-driven and Gradient-driven Simulations Using GF2-BOUT++ code
18. W.W. Lee ♦ Princeton Plasma Physics Laboratory ♦ Numerical Requirements for Simulating L-H Transition
19. Sidney D. V. Williams ♦ University of California San Diego ♦ Determining the Effect of Domain Size on the Accuracy of Magnetic Field Response Calculations in Hermes-3
20. David Eder ♦ University of Hawaii ♦ PISALE Simulation Capabilities for Debris, Shrapnel, and First-Wall Damage in Fusion Prototypes
21. Claudia C. Parisuana Barranca (presented by Alice Koniges) ♦ Stanford University ♦ Modeling Shock Dynamics in Liquid Droplet Targets for High-Repetition-Rate HED Experiments using PISALE code