Michigan Institute for Plasma Science and Engineering (MIPSE)

11th ANNUAL GRADUATE STUDENT SYMPOSIUM

University of Michigan • Michigan State University • University of Notre Dame • Kharazmi University

November 17-18, 2020

Schedule

https://mipse.umich.edu/symposium_2020.php

Tuesday, November 17, 3:30 - 6:30 pm

3:30 - 3:45 pm	**Prof. Mark J. Kushner** Director, MIPSE ***Opening remarks***
3:45 - 4:15 pm	**Oral session I** (Flashtalk previews of poster sessions I and II)
4:15 - 5:00 pm	**Poster session I** (separate Zoom meetings for each poster)
5:00 - 5:45 pm	**Poster session II** (separate Zoom meetings for each poster)
5:45 - 6:30 pm	**KLA recruiting activities**

Wednesday, November 18, 3:30 - 7:15 pm

3:30 - 4:30 pm	**Dr. Sarah Nelson,** National Nuclear Security Administration *Special MIPSE seminar:* ***Lasers, Z Pinches, and Nuclear Weapons:*** ***The Importance of Plasma Physics to the NNSA***
4:30 - 5:00 pm	**Oral session II** (Flashtalk previews of poster sessions III and IV)
5:00 - 5:45 pm	**Poster session III** (separate Zoom meetings for each poster)
5:45 - 6:30 pm	**Poster session IV** (separate Zoom meetings for each poster)
6:30 - 7:00 pm	**Break**
7:00 - 7:15 pm	**Best Presentation Award ceremony**

Poster Session I

Tuesday, November 17, 4:15 - 5:00 pm

1-01 **Asif Iqbal** (MSU)
Characterization of Single Surface Multipactor Discharge in the Frequency Domain

~~1-02~~ ***Moved to Poster Session II***

1-03 **Jinyu Yang** (ND)
Hand-generated Piezoelectric Mechanical-to-electrical Energy Conversion Plasma

1-04 **Michael Springstead** (U-M)
Laboratory Generated Photoionization Fronts Relevant to Cosmology

1-05 **Austin Brenner** (U-M)
Modeling the Earth's Magnetosphere as a Current Circuit

1-06 **Jordyn Polito** (U-M)
A Global Model for the Atmospheric Pressure Plasma Surface Functionalization of Polystyrene

1-07 **Kwyntero Kelso** (U-M)
Observation of Photoionization Fronts in Laboratory Experiments

1-08 **Joshua Woods** (U-M)
Pathways for Increased Performance of a Rotating Magnetic Field Thruster

1-09 **Yang Zhou** (MSU)
Plasmon-Enhanced Resonant Photoemission Using Atomically Thick Dielectric Coatings

1-10 **Zachariah Brown** (U-M)
Experimental Measurement of Non-linear Coupling and Energy Transfer in Plasma Turbulence in a Hall Effect Thruster

1-11 **Michael Wadas** (U-M)
A Theoretical Approach for Transient Shock Strengthening in High-energy-density Laser Compression Experiments

Poster Session II

Tuesday, November 17, 5:00 - 5:45 pm

1-02 **Julian Kinney** (U-M)
Exploration of Parameters for a Future Radiative Shock/Shear Experiment

2-01 **Yi Luo** (MSU)
Exact Theory for Pulsed Laser Induced Photoemission from Biased Surface

2-02 **Griffin Cearley** (U-M)
Computational Investigation of Impulse-fluence Scaling in X-ray Illuminated Materials on the National Ignition Facility

2-03 **Tate Gill** (U-M)
Design of a Three-phase Rotating Magnetic Field Power Processing Unit for Inductive Plasmoid Propulsion

2-04 **Daniel Martin** (ND)
Experimental Confirmation of Transport Model for Solvated Electrons in a Plasma Electrochemical System

2-05 **Ryan Sandberg** (U-M)
FARRSIGHT: A Forward Adaptively Refined and Regularized Semi-Lagrangian Integral Green's Function Hierarchical Tree-code Accelerated Method for the Vlasov-Poisson System

2-06 **Hongmei Tang** (U-M)
High Energy, Relativistic Intensity Laser Channeling and Direct Laser Acceleration of Electrons from an Underdense Plasma

2-07 **Mackenzie Meyer** (U-M)
Modeling Sheath Dynamics around Water Droplets in Low Temperature Plasmas

2-08 **Lucas Stanek** (MSU)
Multi-Fidelity Machine Learning for Extending the Range of High-Fidelity Molecular Dynamics Data

2-09 **Benjamin Wachs** (U-M)
Optimization of a Low Power ECR Thruster using Two-Frequency Heating

2-10 **Mario Balcazar** (U-M)
Phase-Contrast Imaging of Hydrodynamic Shocks in Water with a Betatron X-ray Source

2-11 **Connor Todd** (U-M)
Production of Synthetic Phase Contrast Images for Comparison with CRASH Radiograph Output

2-12 **Andre Antoine** (U-M)
Using Reduced Order Modeling to Understand the Physics of Injection in Laser Wakefield Acceleration

Poster Session III

Wednesday, November 18, 5:00 - 5:45 pm

3-01 **Forrest Glines** (MSU)
Decaying Magnetized Turbulence in the Taylor-Green Vortex

3-02 **Abhijit Jassem** (U-M)
Analysis of Miram Curves with Two-Dimensional Work Function Distributions

3-03 **Sneha Banerjee** (MSU)
Contact Engineering in 2D-Material-Based Electrical Contacts

3-04 **Akash Shah** (U-M)
Development of a Gas-Puff Z-Pinch Experiment for the 1-MA, 100-ns MAIZE Linear Transformer Driver

3-05 **Milad Rasouli** (Kharazmi University)
Gas Plasma Effects on Chemoresistance Ovarian Cells

3-06 **Kseniia Konina** (U-M)
Interactions of Porous Dielectric Materials with Atmospheric Pressure Plasmas

3-07 **Brandon Russell** (U-M)
Magnetic Field Generation at Extreme Laser Intensities

3-08 **George Dowhan** (U-M)
New X-Pinch Platform and Diagnostics for the MAIZE Facility

3-09 **Jon Murphy** (U-M)
Optimization of High Repetition-rate Laser-driven Particle and Radiation Sources Using Machine-learning Techniques

3-10 **Leanne Su** (U-M)
Physical Differences Between Xenon and Krypton Operation on a Magnetically-Shielded Hall Thruster

3-11 **Jinpu Lin** (U-M)
Towards Predicting Electron Beam Charge upon Phase Control in Laser Wakefield Accelerators Using Supervised Learning Techniques

3-12 **Thomas Marks** (U-M)
Fluid Simulations of Magnetic Nozzle Thruster Including Plasma Source

Poster Session IV

Wednesday, November 18, 5:45 - 6:30 pm

4-01 **Janez Krek** (MSU)
Utilizing a Global Model to Identify Relevant Reactions in Chemically Complicated Plasma Systems

4-02 **Raul Melean** (U-M)
Characterization of Pulsed-power Magnetized Jets on MAIZE

4-03 **Steven Lanham** (U-M)
Controlling Composition of Particles Grown in Dusty Plasmas

4-04 **Christopher Sercel** (U-M)
Effect of Flux Conservers on Inductive Pulsed Plasmoid Thrusters

4-05 **Robert VanDervort** (U-M)
Experiments Relevant to the Interaction of Stellar Radiation with Nearby Gas Clouds

4-06 **Matthew Byrne** (U-M)
Investigation of Techniques to Mitigate the Erosion of a Mesh Reflector Exposed to a Hall Thruster Plume

4-07 **Shadrach Hepner** (U-M)
Low Frequency Instabilities in a Magnetic Nozzle

4-08 **Heath LeFevre** (U-M)
Ni-lined Capsules as Backlighters for Multiple Measurements in High-energy-density Physics Experiments

4-09 **Jason Cardarelli** (U-M)
Optimized Spectroscopic Measurement of High Energy, Narrow Energy-Spread Electron Beams from a Laser Wakefield Accelerator

4-10 **Khalil Bryant** (U-M)
PlasmaPy for HEDP Regime

4-11 **Collin Whittaker** (U-M)
Uncertainty Quantification and Credible Predictions for Reduced-Fidelity Modeling of Porous Electrospray

4-12 **Shannon Hill** (U-M)
Using Auroras to Investigate the Geospace Magnetic Topology