



Michigan Institute for Plasma Science and Engineering (MIPSE)

13th ANNUAL GRADUATE STUDENT SYMPOSIUM

November 16, 2022

University of Michigan North Campus, Ann Arbor, MI 48109

Schedule

I. Special MIPSE Seminar

3213 (Johnson Rooms), **Lurie Engineering Center**, 1221 Beal Avenue

- 12:30 – 12:55 pm** **Registration, refreshments**
- 12:55 – 1:00 pm** **Prof. Mark J. Kushner**, University of Michigan
Director, MIPSE
Opening remarks
- 1:00 – 2:00 pm** Special MIPSE seminar
Dr. Radha Bahukutumbi, Laboratory for Laser Energetics, Univ. of Rochester
Unraveling Implosion Physics in Inertial Confinement Fusion: Direct-drive Simulations, Experiments, and Physics-informed Data Science
- 2:00 – 2:15 pm** **Prof. Sergey Baryshev**, Michigan State University
Chair, AVS Michigan Chapter
Introducing American Vacuum Society Michigan Chapter

II. Student Posters

Atrium, **EECS Building**, 1301 Beal Avenue

- 2:30 – 3:00 pm** Poster setup
- 3:00 – 3:50 pm** **Poster session I**
- 3:50 – 4:40 pm** **Poster session II**
- 4:40 – 5:30 pm** **Poster session III**
- 5:30 – 5:45 pm** Poster removal
- 5:45 – 6:00 pm** ***Best Presentation Award ceremony***

Participating institutions: University of Michigan, Michigan State University, University of Notre Dame, University of Toledo, SUNY Buffalo.

Poster Session I

1-01	Qian Qian	U-M	<i>Spin and Polarization-dependent Osiris QED Module for the Future Strong Field QED Laser-plasma Experiment</i>
1-02	Ibukunoluwa Akintola	Notre Dame	<i>Understanding Temperature Inhibition of Methane Conversion in DBD Plasma Using Electrical Characterization and Optical Emission Spectroscopy</i>
1-03	Md Arifuzzaman Faisal	MSU	<i>Grating Optimization for Smith-Purcell Radiation: Direct Correlation between Spatial Growth Rate and Starting Current</i>
1-04	Salvatore Baldinucci	U-M	<i>Model for Impact of Wall Material on ECR Magnetic Nozzle Operation</i>
1-05	Gina Vasey	MSU	<i>Identifying Governing ODEs in Irregular Physical Domain with Diffusion</i>
1-06	Kelsey Williams	SUNY Buffalo	<i>Development of a Microstrip Half-Wave Split-Ring Resonator for Microwave-Assisted Laser-Induced Breakdown Spectroscopy and Laser Ablation Molecular Isotopic Spectrometry</i>
1-07	Thomas Marks	U-M	<i>Correlations between Empirical and Self-consistent Anomalous Transport Models in Hall Thrusters</i>
1-08	Julia Marshall	U-M	<i>Resolving Extended Space and Time Correlations in Molecular Dynamics Simulations of Strongly Magnetized Plasmas</i>
1-09	Sankhadeep Basu	MSU	<i>Non-thermal Plasma Synthesis of Hydrophobic Silicon Nanoparticles</i>
1-10	Michael Wadas	U-M	<i>A Hydrodynamic Mechanism for Hot Spot Formation in the Remnant of SN1987A</i>
1-11	Joshua Latham	U-M	<i>Relativistic Laser Perturbation to Laser-Driven Magnetic Reconnection</i>
1-12	Cameron Papson	MSU	<i>Nonthermal Plasma Synthesis of Carbon Nanodots</i>
1-13	Sandeep Narasapura Ramesh	U. Toledo	<i>Frequency-Selective Plasma Limiters</i>
1-14	Farha Islam Mime	MSU	<i>Femtosecond Laser Formation of NV Centers in Diamond and STED Microscopy Characterization</i>
1-15	Florian Krüger	U-M	<i>Hybrid Optimization Method for Parameter Fitting in High Aspect Ratio Etching</i>
1-16	Julian Kinney	U-M	<i>Exploring the Importance of Temperature-Dependent Opacities in the Modeling of X-Ray Induced Thermomechanical Shock Experiments</i>

Poster Session II

2-01	Ayush Paudel	MSU	<i>A Discrete Cavity Analysis of Coupled-cavity Travelling Wave Tubes</i>
2-02	André Antoine	U-M	<i>Data-driven Modelling of Laser-plasma Experiments Enabled by Large Datasets</i>
2-03	Zhongyu Cheng	Notre Dame	<i>Non-thermal Plasma Jet Sintering of Indium Tin Oxide Thin Films</i>
2-04	Kseniia Konina	U-M	<i>Interaction of Atmospheric Pressure Plasma Jets with Complex Surfaces of Different Dielectrics</i>
2-05	Taha Posos	MSU	<i>Enabling Bright Carbon Nanotube Fiber Field Emission Cathode</i>
2-06	Ryan Revolinsky	U-M	<i>Design and Demonstration of a Dual Frequency, Harmonic, Magnetically Insulated Line Oscillator</i>
2-07	Sarah Roberts	MSU	<i>Microwave Plasma Assisted Chemical Vapor Deposition Process Variable Optimization of Nitrogen Doped Single Crystal Diamond</i>
2-08	Michael Springstead	U-M	<i>Developing a Shock-Ramp Laser Drive to Extend the Pressure Ranges of the NIF Gbar Platform Single-Shock Hugoniot Measurements</i>
2-09	Kazi Kabir	U. Toledo	<i>Evanescent-Mode Cavity Resonator-Based Microwave Plasma Jet Technology</i>
2-10	Cristian Herrera-Rodriguez	MSU	<i>MPACVD Diamond: Growth Conditions and Power Electronics Applications</i>
2-11	Jordyn Polito	U-M	<i>Reaction Mechanisms for Atmospheric Pressure Plasma Treatment of Organic Molecules in Solution</i>
2-12	George Dowhan	U-M	<i>Faraday Rotation Imaging of X-Pinch Implosion Dynamics</i>
2-13	Christopher Sercel	U-M	<i>Inductive Probing in a Rotating Magnetic Field Thruster</i>
2-14	Khalil Bryant	U-M	<i>Preliminary Results for Experiment at WiPPL</i>
2-15	Donovan White	U-M	<i>Beryllium Probe Neutron Diagnostic for a Gas-Puff Z-Pinch Neutron Source on a 1-MA, 100-ns Linear Transformer Driver</i>

Poster Session III

3-01	Thomas Chuna	MSU	<i>Conservative Structure Functions Via BGK Transport Equation</i>
3-02	Garam Lee	Notre Dame	<i>Investigation of the Interaction Between Non-Thermal Plasma Activated Nitrogen and Metal Surfaces</i>
3-03	Leanne Su	U-M	<i>Plasma Parameter Scaling at High Powers for a Magnetically Shielded Hall Thruster Operating on Krypton</i>
3-04	Parker Roberts	U-M	<i>Mitigation of Stray Light for Low-Temperature Thomson Scattering in DIII-D</i>
3-05	Evan Litch	U-M	<i>Low Bias Frequencies in ICP Reactors for High Aspect Ratio Plasma Etching</i>
3-06	Andre Antoine	U-M	<i>Characterizing Hot Electrons in Ensemble PIC Simulations of High-intensity, Laser-plasma Interactions with Machine Learning</i>
3-07	Yang Zhou	MSU	<i>Quantum Pathways Interference in Photoemission from Biased Metal Surfaces Induced by Two-color Lasers</i>
3-08	Kwyntero Kelso	U-M	<i>Photoionization Front Laboratory Experiments at the OMEGA Laser Facility</i>
3-09	Nicholas Ernst	U-M	<i>Controllable Electron Injection for Laser Wakefield Acceleration Using Co-Propagating Laser Pulses</i>
3-10	Tanvi Nikhar	MSU	<i>Evidence of Gas Phase Nucleation of Nano Diamond Through the Analysis of Activation Energy</i>
3-11	Moises Angulo Enriquez	U-M	<i>Numerical Simulation of the Hollow Cathode Plasma Discharge Using the Continuum-kinetic Method in 2D-2V</i>
3-12	Joe Chen	U-M	<i>Exploding Thin Liner Experiment on MAIZE</i>
3-13	Dion Li	U-M	<i>Induced Current Due to Electromagnetic Shock Produced by Charge Impact on a Conducting Surface</i>
3-14	S M Asaduzzaman	MSU	<i>Chemical Mechanical Polishing Rate and Surface Roughness for Single-Crystalline Diamond Substrates</i>
3-15	Collin Whittaker	U-M	<i>A Multi-Site Emission Modeling Framework for Porous Electrospays</i>
3-16	Madison Allen	U-M	<i>Model Calibration using an Optimal Experimental Design for Ion Current Density and Ion Energy</i>