**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

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| **12:30 – 12:55 pm** | **Registration, refreshments** |
| **12:55 – 1:00 pm** | **Prof. Mark J. Kushner**, University of Michigan<br>Director, MIPSE<br>***Opening remarks*** |
| **1:00 – 2:00 pm** | Special MIPSE seminar<br>**Dr. Radha Bahukutumbi,** Laboratory for Laser Energetics, Univ. of Rochester<br>***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<br>Chair, AVS Michigan Chapter<br>***Introducing American Vacuum Society Michigan Chapter*** |

### II. Student Posters

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

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| **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

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

## Poster Session II

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| **2-01** | **Ayush Paudel** | MSU | ***A Discrete Cavity Analysis of Coupled-cavity Travelling Wave Tubes*** |
| **2-02** | **André Antoine** | U-M | ***Data-driven Modelling of Laser-plasma Experiments Enabled by Large Datasets*** |
| **2-03** | **Zhongyu Cheng** | Notre Dame | ***Non-thermal Plasma Jet Sintering of Indium Tin Oxide Thin Films*** |
| **2-04** | **Kseniia Konina** | U-M | ***Interaction of Atmospheric Pressure Plasma Jets with Complex Surfaces of Different Dielectrics*** |
| **2-05** | **Taha Posos** | MSU | ***Enabling Bright Carbon Nanotube Fiber Field Emission Cathode*** |
| **2-06** | **Ryan Revolinsky** | U-M | ***Design and Demonstration of a Dual Frequency, Harmonic, Magnetically Insulated Line Oscillator*** |
| **2-07** | **Sarah Roberts** | MSU | ***Microwave Plasma Assisted Chemical Vapor Deposition Process Variable Optimization of Nitrogen Doped Single Crystal Diamond*** |
| **2-08** | **Tate Gill** | U-M | ***Alternative Propellants for Inductive Pulsed Plasma Propulsion*** |
| **2-09** | **Michael Springstead** | U-M | ***Developing a Shock-Ramp Laser Drive to Extend the Pressure Ranges of the NIF Gbar Platform Single-Shock Hugoniot Measurements*** |
| **2-10** | **Kazi Kabir** | U. Toledo | ***Evanescent-Mode Cavity Resonator-Based Microwave Plasma Jet Technology*** |
| **2-11** | **Cristian Herrera-Rodriguez** | MSU | ***MPACVD Diamond: Growth Conditions and Power Electronics Applications*** |
| **2-12** | **Jordyn Polito** | U-M | ***Reaction Mechanisms for Atmospheric Pressure Plasma Treatment of Organic Molecules in Solution*** |
| **2-13** | **George Dowhan** | U-M | ***Faraday Rotation Imaging of X-Pinch Implosion Dynamics*** |
| **2-14** | **Christopher Sercel** | U-M | ***Inductive Probing in a Rotating Magnetic Field Thruster*** |
| **2-15** | **Khalil Bryant** | U-M | ***Preliminary Results for Experiment at WiPPL*** |
| **2-16** | **Donovan White** | U-M | ***Beryllium Probe Neutron Diagnostic for a Gas-Puff Z-Pinch Neutron Source on a 1-MA, 100-ns Linear Transformer Driver*** |

## Poster Session III

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