Michigan Institute for Plasma Science and Engineering (MIPSE)

University of Michigan & Michigan State University

5th ANNUAL GRADUATE STUDENT SYMPOSIUM

October 8, 2014
1200 EECS, 1301 Beal Avenue, Ann Arbor, MI 48109

Schedule

1:45 – 2:25 Registration, poster set-up

2:25 – 2:30 Prof. Mark J. Kushner, Director of MIPSE
Opening Remarks

2:30 – 3:15 Poster Session I

3:15 – 3:30 Cookies + soda

3:30 – 4:30 Special MIPSE Seminar:
Prof. Gottlieb Oehrlein, University of Maryland
Low-Temperature Plasma Surface Interactions: Nanoscale Graphitic Film
Formation, Atomic Layer Etching & Atm. Pressure Plasma Jet Modification
of Biomolecules

4:30 – 5:00 Refreshments (box lunch + coffee, tea)

5:00 – 5:45 Poster Session II

5:45 – 6:30 Poster Session III

6:45 – 7:00 Best Presentation Award Ceremony
## Poster Session I

| 1 | Charles Bardel, Michigan State University  
*Particle Lists and Monte Carlo Collisional Dynamics on GPUs*
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| 4 | Thomas Batson, University of Michigan  
*High Repetition Rate Relativistic Electron Beam Generation from Intense Laser Solid Interactions*
| 7 | Chuanfei Dong, University of Michigan  
*Minor Ion Heating by Low-frequency Alfvén Waves: Thermal Motion vs. Non-thermal Motion*
| 10 | Horatiu Dragnea, University of Michigan  
*The X2 Nested Channel Hall Effect Thruster: an Inner Channel Simulation*
| 13 | Sarah N. Gucker, University of Michigan  
*Time Resolved Studies of Steam Discharges*
| 16 | Mayur Jain, Michigan State University  
*Electrostatic Particle Based Modeling for Simulation of Strongly Coupled Plasmas*
| 19 | Derek Hung, University of Michigan  
*Current Crowding in Thin Film Electrical Contacts*
| 22 | Aram Markosyan, University of Michigan  
*PumpKin: A Tool to Find Principal Pathways in Plasma Chemical Models*
| 25 | Derek Neben, Michigan State University  
*Metallic Beam Development with an ECR Ion Source at Michigan State University (MSU)*
| 28 | David Simon, University of Michigan  
*Analysis of a Disk-on-Rod Traveling Wave Amplifier*
| 31 | Adam Steiner, University of Michigan  
*Investigation of the Electrothermal Instability on Planar Foil Ablation Experiments*
| 34 | Wesley Wan, University of Michigan  
*Results of a Supersonic, Single-mode, Shockwave-driven Kelvin-Helmholtz Instability Experiment*
| 37 | Rachel Young, University of Michigan  
*Accretion Shocks on Young Stars: A Laboratory-Astrophysics Investigation*
Wei Tian, University of Michigan
*The Long Term Effects of Random DBD Streamers on Thin Liquid Layers over Tissues*

Joshua Davis, University of Michigan
*Measurements of Laser Generated X-ray Spectra from Irradiated Gold Foils*

Frans Ebersohn, University of Michigan
*Development and Validation of a Quasi-one-dimensional Particle-in-cell Code for Magnetic Nozzle Simulation*

Scott Rice, Michigan State University
*Multipactor Modelling Using an Averaged Version of Furman’s SEY Model*

Derek Hung, University of Michigan
*A General Study of Absolute Instability in Electron Beam-Circuit Interactions*

Shuo Huang, University of Michigan
*Dual Frequency Capacitively Coupled Discharge Sustained in Cl₂*

Peng Tian, University of Michigan
*Plasma Dynamics of Microwave Excited Microplasmas in a Sub-Millimeter Cavity*

Kentaro Hara, University of Michigan
*Kinetic Simulation of Trapped Particle Bunching Instability in Electron Plasma Waves*

Lois Keller Sarno-Smith, University of Michigan
*Where Did Earth’s Post-Midnight High Energy Plasmasphere Go?*

Guy Parsey, Michigan State University
*Study of the Feasibility of an EEDF Driven Rare Gas Metastable Laser: Application of a Kinetic Global Model*

Ayan Bhattacharya, Michigan State University
*Plasma-Assisted CVD Grown Single Crystal Diamond for Swift-Heavy Ion Beam Detectors*

Matthew Weis, University of Michigan
*Magneto-Rayleigh-Taylor Growth and Feedthrough in Cylindrical Liners*

Shannon Demlow, Michigan State University
*Temperature Dependence of Boron Doping Efficiency*
Poster Session III

3 David Yager-Elorriaga, University of Michigan
Experimental Investigation of the Effects of an Axial Magnetic Field on the Magneto-Rayleigh-Taylor Instability in Ablating Planar Foils

6 Gautham Dharuman, Michigan State University
Effective Quantum Potentials for Atomic, Molecular and Scattering Processes in Dense Plasmas

9 Jeff Fein, University of Michigan
Experiments on the OMEGA EP Laser to Study the Material Dependence of the Two-plasmon Decay Instability

12 Scott Hall, University of Michigan
Preliminary Observations of Channel Interaction in a 100 kW-Class Nested Channel Hall Thruster

15 Derek Hung, University of Michigan
Recent Models on Classical, Ballistic, and Quantum Diodes

18 Amanda Lietz, University of Michigan
Dielectric Barrier Discharges in Humid Air

21 Shreya Nad, Michigan State University
Efficient Experimental Methods that Enable the Control of High Pressure Microwave Discharges

24 Astrid Raisanen, University of Michigan
Simulating a 5 kW Class Hall Effect Thruster

27 Seth Norberg, University of Michigan
Plasma Jet Interaction with Wet Cells

30 Zhen (Tony) Zhao, University of Michigan
Ring-Shaped Distributions of Quasimonoe energetic Electron Beams Generated via Density Discontinuities in a Two-Stage Gas Cell

33 Yiting Zhang, University of Michigan
Insights to Etching Process Control through 3-Dimensional Profile Simulation

36 Archis Joglekar, University of Michigan
Direct Comparison of Full-Scale Vlasov-Fokker-Planck and Classical Modeling of Megagauss Magnetic Field Generation in Plasma near Hohlraum Walls from Nanosecond Pulses

39 Anthony Raymond, University of Michigan
X-Ray Imaging of Ultrafast Magnetic Reconnection Driven by Relativistic Electrons