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

4 Thomas Batson, University of Michigan
High Repetition Rate Relativistic Electron Beam Generation from Intense Laser Solid Interactions

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

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
Poster Session II

2  Wei Tian, University of Michigan  
   The Long Term Effects of Random DBD Streamers on Thin Liquid Layers over Tissues

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

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

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

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

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

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

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

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

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

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

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

38 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 Chuanfei Dong, University of Michigan
Minor Ion Heating by Low-frequency Alfvén Waves: Thermal Motion vs. Non-thermal Motion

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 Quasimonoenergetic 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