



**Michigan Institute for Plasma Science and Engineering (MIPSE)**  
*University of Michigan & Michigan State University*

## **2nd ANNUAL GRADUATE STUDENT SYMPOSIUM**

**September 21, 2011**  
**1005 EECS, 1301 Beal Avenue, Ann Arbor, MI 48109**

### **Schedule**

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| <b>3:00 – 3:15</b> | Prof. Mark J. Kushner, Director of MIPSE<br><b><i>Opening Remarks</i></b>  |
| <b>3:15 – 4:00</b> | <b>Poster Session I</b>  |
| <b>4:00 – 5:00</b> | <b>Special MIPSE Seminar:</b><br><b>Dr. Kimberly S. Budil, Lawrence Livermore National Laboratory</b><br><b><i>High Energy Density Plasma Physics:</i></b><br><b><i>An Evolving Role on the National Scene</i></b> |
| <b>5:00 – 5:45</b> | <b>Poster Session II</b>   |
| <b>5:45 – 6:30</b> | <b>Poster Session III</b>  |
| <b>6:45 – 7:00</b> | <b><i>Best Presentation Award Ceremony</i></b>   |

*Refreshments will be provided.*

## Poster Session I

- 1-01 **Rachel Young**, University of Michigan  
***Collisions between Red Giant Stars and Active Galactic Nuclei Accretion Disks***
- 1-02 **Benjamin Yee**, University of Michigan  
***Intra-Pulse Rotational Spectroscopy for Pulsed-Nanosecond Discharges***
- 1-03 **Michael Logue**, University of Michigan  
***Ion Energy Distributions in Pulsed Inductively-Coupled Plasmas Having a Pulsed Boundary Electrode***
- 1-04 **Dzung Tran**, Michigan State University  
***Microwave Plasma-Assisted Etching for Smoothing Polycrystalline Diamond Films***
- 1-05 **Yiting Zhang**, University of Michigan  
***Development of Ion Energy Angular Distributions through the Pre-sheath and Sheath in Partial Pulsed Dual-Frequency Capacitively Coupled Plasmas***
- 1-06 **Carlos Di Stefano**, University of Michigan  
***Spike Morphology in Supernova-Relevant Hydrodynamics Experiments***
- 1-07 **Will Schumaker**, University of Michigan  
***Ultrafast Electron Radiography of Magnetic Fields in High-Intensity Laser-Solid Interactions***
- 1-08 **Paul Cummings**, University of Michigan  
***Computational Methods for Simulating the Generation of Synchrotron-Like Radiation in Laser Wakefield Acceleration Experiments***
- 1-09 **Peiyao Liu**, Michigan State University  
***Atmospheric Pressure Microwave-Powered Microplasma Source***
- 1-10 **Bradley Sommers**, University of Michigan  
***Nonlinear Oscillations of Levitated Gas Bubbles and Their Impact on Plasma Formation in Water***
- 1-11 **David Liaw**, University of Michigan  
***Simulation of Self-Neutralization Techniques for Charged Particle Thrusters on Nanospacecraft***
- 1-12 **Yajun Gu**, Michigan State University  
***Microwave Plasma Assisted CVD Reactor Design For High Deposition Rate Diamond Synthesis***
- 1-13 **Christine Krauland**, University of Michigan  
***Reverse Radiative Shock Experiments on the OMEGA-60 Laser***

## Poster Session II

- 2-01 **Andrew Baczewski**, Michigan State University  
*Accelerated Cartesian Expansions (ACE): A Linear Scaling Method for the Rapid Evaluation of Pairwise Interactions*
- 2-02 **Michael Vargas**, University of Michigan  
*Focusing Betatron Radiation Produced by Laser Wakefield Accelerated Electrons with a Spherically Curved Crystal*
- 2-03 **Wei Tian**, University of Michigan  
*Plasma Discharge in Water Based on Pre-existing Bubbles and Electric Field Rarefaction*
- 2-04 **Jing Lu**, Michigan State University  
*Microwave Plasma Assisted Synthesis of Single Crystal Diamond at High Pressures and High Power Densities*
- 2-05 **Ian Rittersdorf**, University of Michigan  
*Effects of Random Circuit Fabrication Errors on Small Signal Gain and Output Phase in a Traveling Wave Tube*
- 2-06 **Franklin Dollar**, University of Michigan  
*Novel Heavy Particle Acceleration from High Intensity, Short Pulse Lasers*
- 2-07 **Paul Giuliano**, University of Michigan  
*Effects of Detailed Heavy Species Interactions in DSMC-PIC Simulation of a Simplified Plasma Test Cell*
- 2-08 **Adam Steiner**, University of Michigan  
*Experimental Investigation of the Evolution of the Magneto-Rayleigh Taylor Instability on Thin Foils*
- 2-09 **Naveen Nair**, Michigan State University  
*An Adaptive Locally Smooth Surface Parameterization for Integral Equations*
- 2-10 **Eliseo Gamboa**, University of Michigan  
*Imaging X-Ray Thomson Scattering Spectroscopy for Characterizing Extreme Matter States*
- 2-11 **Iverson Bell**, University of Michigan  
*Investigating the Potential of Electrodynamical Tethers to Enhance Capability of Ultra-small Spacecraft*
- 2-12 **Sarah Nowak Gucker**, University of Michigan  
*Power and Decomposition Studies on an Underwater Dielectric Barrier Discharge Plasma*
- 2-13 **Jun-Chieh (Jerry) Wang**, University of Michigan  
*Electron Current Extraction and Interaction of RF mDBD Arrays*

## Poster Session III

- 3-01 **Panpan Zhang**, Michigan State University  
*Two-dimensional PIC-MCC Simulations of the Electron Multiplication in a Gas Electron Multiplier*
- 3-02 **Calvin Zulick**, University of Michigan  
*Bremsstrahlung Temperature Scaling in Ultra-Intense Laser-Plasma Interactions*
- 3-03 **Nick Patterson**, University of Michigan  
*Investigation of Mixed Cell Treatment via the Support Operator Method*
- 3-04 **Zhaohan He**, University of Michigan  
*Electron Generation from a High Repetition Lambda Cubed Laser Wakefield*
- 3-05 **Peng Zhang**, University of Michigan  
*Analysis of Bulk and Thin Film Contact Resistance with Dissimilar Materials*
- 3-06 **Shannon Demlow**, Michigan State University  
*Properties of Boron Doped Diamond Grown by Plasma Enhanced Chemical Vapor Deposition*
- 3-07 **Sreenivas Varadan**, University of Michigan  
*Compressible Turbulence and Interfacial Instabilities*
- 3-08 **Channing Huntington**, University of Michigan  
*Same-Shot X-Ray Thomson Scattering and Streaked Imaging of Xenon Radiative Shock Experiments*
- 3-09 **Collin Meierbachtol**, Michigan State University  
*Self-Consistent Simulation of Microwave PACVD Reactors for Diamond Growth*
- 3-10 **Laura Spencer**, University of Michigan  
*Analysis of Computational Work in Comparison with Experimental Results for an Atmospheric Pressure Microwave Plasma*
- 3-11 **Sang-Heon Song**, University of Michigan  
*Control Etch Rate of SiO<sub>2</sub> in Ar/CF<sub>4</sub>/O<sub>2</sub> Capacitively Coupled Plasmas Using Pulsed Power with Constant Power and Constant Voltage of the Substrate*
- 3-12 **Aimee Hubble**, University of Michigan  
*Addressing Issues in Probing the Magnetic Cusp Region*
- 3-13 **Kentaro Hara**, University of Michigan  
*1D hybrid-Vlasov Simulation for Hall Thrusters*