

Department of Physics and Astronomy
University of Rochester
Rochester, New York 14627-0171

**ROCHESTER SYMPOSIUM FOR
PHYSICS (ASTRONOMY & OPTICS) STUDENTS**

April 9, 2005

PROGRAM

7:45-8:15 **RSPS Registration:** Bausch and Lomb Lobby
Option – tour sign up for the Laboratory for Laser Energetics
Coffee in Room 208

8:15-8:30 **Room 109: Welcome, Prof. Dan Watson, Assistant Chair,
RSPS XXIV**

8:30-9:45 **Room 109: Astrophysics**

*Session Chair: Prof. William Forrest, University of
Rochester*

8:30 Coronal Mass Ejections and Forbush Decrease Recovery
Robert Penna, Prof. Alice Quillen, University of
Rochester

8:45 Emission Line Gas in Radio Galaxies
George Privon, Prof. Christopher O’Dea, Rochester
Institute of Technology

9:00 Silicate Emission Features of Class II Young Stellar Objects
Jarron Leisenring, Prof. Dan Watson, University of Rochester

9:15 Accretion Region Variability Mechanisms in Low Luminosity AGN
Grant Tremblay, Prof. Adam Frank, University of Rochester

9:30 A Spitzer Survey of NGC 2024 and Surrounding Region
Kevin Flaherty, Prof. Judy Pipher, and Robert Gutermuth, University of Rochester

8:30-9:45 Room 106: Particles and Nuclei Physics

Session Chair: Prof. Mark Yuly, Houghton College

8:30 The Lifetime of Orthopositronium
Blake Winter, Prof. Mark Yuly, Houghton College

8:45 Neutron-deuteron Scattering as a Probe of the Three-Nucleon Force
Christopher Wells, Prof. Mark Yuly, Houghton College

9:00 Band Crossing in Shape Transition Nuclei $^{111,109}\text{Ru}$
Daniel Riley, State University of New York at Geneseo,
Prof. Douglass Cline, University of Rochester

9:15 Aqueous Scintillation Development and Testing
David Martell, Prof. Kevin McFarland, University of Rochester

9:30 Calculating the Magnetic Moment of Cosmic-Ray Muon
 Ian Kleckner, Prof. KevinMcFarland, University of
 Rochester

9:45-10:30 Room 109: Earth and Planetary Physics

*Session Chair: Prof. David Douglass, University of
Rochester*

9:45 Is the Arctic Melting?
 Matthew MacWilliams, St. John Fisher College,
 Prof. David Douglass, University of Rochester

10:00 Seismic Waveform Modeling: Analysis of the Velocity
 Structure of the Outer Core
 Lindsey Goodman, Binghamton University,
 Prof. Lianxing Xen, State University of New York at
 Stony Brook

10:15 Studies of Terrestrial and Planetary Radio Emissions
 Justin Waterman, Prof. Allan Weatherwax, Siena College,
 and Prof. James LaBelle, Dartmouth College

9:45-10:30 Room 106: Atoms and Molecules

Session Chair: Prof. John Howell, University of Rochester

9:45 Lowdin Population Analysis and Rotational Invariance
 George Bruhn, University of Rochester,
 Prof. Aurora Clark, Los Alamos National Laboratory

10:00 Coating of Stainless Steel Cells in an Attempt to Prolong the Polarization of Optically Pumped Rubidium
Sean Gill, Michael Wickham, and Prof. Mark Rosenberry,
Siena College

10:15 Absorption Imaging of Ultracold Cesium in a Magneto-Optical Trap
Brian Anderson, Michael Holmes, and
Prof. Nicholas Bigelow, University of Rochester

10:30-11:00 Room 208: Poster Session and Break

Capturing Air Flows with Low-cost Schlieren Video
Matthew Waters, Timothy Brackbill, and
Prof. Scott Franklin, Rochester Institute of Technology

11:00-12:00 Room 109: Complex Systems I

Session Chair: Prof. Scott Franklin, Rochester Institute of Technology

11:00 Connected Networks, Jammed States, and Force Fluctuations in Prolate Granular Materials
Kenneth Desmond, Prof. Scott Franklin, Rochester Institute of Technology

11:15 Superconductor Degradation Studies
Amber Beckley, Binghamton University, Prof. Xiaoxing Xi, A.V. Pogrebnyakov, Pennsylvania State University, and Prof. R. Donovan, Reed College

- 11:30 Twinning in Metallic Alloys
 Richard Bell, Prof. Eric Cotts, Binghamton University
- 11:45 The Effect of Annealing on Magnetic Measurements of
Granular Thin Films of $\text{Cu}_{80}\text{Co}_{20}$
 Fionnbarr O'Grady, Nam Kim, Jordan Peck, and
 Prof. Jian Wang, Binghamton University

11:00-12:00 Room 106: Particle Physics and Detectors

Session Chair: Dr. David Rainwater, University of Rochester

- 11:00 The Effect of Tower Threshold on Jet Response, Efficiency
and Fate
Rate at Compact Muon Solenoid (CMS)
 James Dolen, Christopher Justus, Prof. Regina Demina,
 University of Rochester
- 11:15 The Effects of Production-Level Radiation on Top Quark
Mass Calculation
 George Bruhn, Prof. Lynne Orr, University of Rochester
- 11:30 Simulation of Top Quark Pair Production as Background for
Higgs Events at the Compact Muon Solenoid (CMS)
 Christopher Justus, James Dolen, Prof. Regina Demina,
 University of Rochester
- 11:45 Radiation Damage Caused by ^4He Charged Ions from
Radioisotopes in CR-39 Plastic Detector
 Robert Poltis, Jeffry Walker, Prof. Gurmukh Singh, and
 Prof. James Lauffenberger, Canisius College

12:00-1:00 Lunch — The Meliora, Salon D

1:00-2:00 EVERYONE Room 109: World Year Physics 2005

Introduction: Prof. Arie Bodek, University of Rochester

Why Einstein? Why 2005?

Dr. Gary White, Director of the Society of Physics
Students, American Institute of Physics

2:00-3:15 Room 109: Complex Systems II and Science Education

*Session Chair: Prof. Richard Mancuso, State University
of New York at Brockport*

2:00 Chaos in Resistor-Inductor-Diode Circuit
 Joseph Murphy, Prof. Richard Mancuso, and Prof.
 Mohammed Tahar, State University of New York at
 Brockport

2:15 Avalanches in Granular Materials: A Review of the Literature
 Scott Barker, Prof. Scott Franklin, Rochester Institute of
 Technology

2:30 3D Avalanching of Rod-like Granular Materials
 Walter Hopkins, Prof. Scott Franklin,
 Rochester Institute of Technology

2:45 Investigating Student Writing in Physics Courses
 Lars Schweidenback, Prof. Scott Franklin, Rochester
 Institute of Technology

3:00 Y12.0007: Search for Strange-Charmed Pentaquark States in
1.96 TeV ppbar Collison
Scott Field, Prof. Arie Bodek, University of Rochester

2:00-3:00 Room 106: Optics and Fields

*Session Chair: Prof. Miguel Alonso, University of
Rochester*

2:00 Viewing Atmospheric Disturbances using Speckle
Cadet Venkat Motupalli, Cadet David Farrar, and
Major Louis Florence, United States Military Academy,
West Point

2:15 Resolving the Phase Ambiguity in Continuous-Wave Sonar
Devin Grady, Prof. Michael O'Grady, State University
of New York at Fredonia

2:30 Frequency Dependent Dielectrics and the Casimir Effect
Cadet Jennifer Sabino, Prof. Mitch Pfenning, United
States
Military Academy, West Point

2:45 Adaptive Integration of Highly Oscillatory Functions
Samuel Wadsworth, Prof. Miguel Alonso, University of
Rochester

3:00- Refreshments to Go, Bausch and Lomb Hall Lobby

3:15

**Option -Tour of the Laboratory for Laser Energetics
(sign up requested at arrival)**

Cars should leave for Laboratory for Laser Energetics