

The Rochester Symposium for Physics Students (RSPS) was founded in 1981. In 2001 the symposia expanded the name to: *The Rochester Symposium for Physics (Astronomy and Optics) Students (RSPS)*. By 2005 the symposia expanded the name to: The Rochester Symposium for Physics (Astronomy and Optics) Students, Society of Physics Students (SPS) Zone 2 Regional Meeting.

The Symposium is a one-day meeting at which undergraduate students give fifteen-minute papers and/or poster session on research projects, library study projects, independent laboratory work, senior thesis, summer projects, in physics, astronomy, optics, and related fields. The abstracts that have been submitted by students have covered the subject matter quite diversely, such as condensed matter, astronomy, nuclear physics, environmental, medical and biological physics, particle physics, quantum optics, instrumentation and techniques, and educational physics. The RSPS research conferences are less formal than American Physical Society Meetings however the format is the same.

The symposium is usually held on the campus of the University of Rochester, hosting Northeastern regional. In 2006 a new tradition began with Houghton College, of joint/hosting the symposium at other regional colleges every third year. The RSPS of 2009 was another great success held at West Point. In 2012, the symposium will be joint hosted with Siena College. In addition as of 2005, the Symposium also includes a special lecture by a guest speaker or as SPS members participate in the Physics Jeopardy Game for fun.

On Saturday April 9, 2011 the Thirtieth Rochester Symposium for Physics (Astronomy and Optics) Students (RSPS) which also served as a Northeast Regional Zone 2 Meeting for the National Society of Physics Students, was joined with The Astronomical Society of New York (ASNY) Conference that was held at the Department of Physics and Astronomy at the University of Rochester. It was a pleasure to combine ASNY talks with RSPS during the morning parallel sessions, the poster morning break session, and the luncheon. This made it easier for University of Rochester Students pending their major, physics or physics and astronomy. The fifty-one registrants consisting of presenters, advisors and guests, from Colgate University, West Point, Houghton College, SUNY Brockport, SUNY Oswego, Siena College, and University of Rochester, and ten more from the ASNY conference. 128 enjoyed the conference luncheon at the on campus Meliora Faculty Club. Conference guests receive a mid-morning refreshment break during the poster session and refreshments again at the time of departure. End of Conference Tour sponsored by RSPS: Twenty-two participated in the Laser Engertics Laboratory tour.

The 2011 conference's options for colleagues and supporters to attend offered an impressive wide range with 30 presentations and 22 (10 RSPS) posters for the poster session. In the morning the symposium consisted of two parallel sessions A and B, and a poster session. In the afternoon the symposium consisted of three parallel sessions A, B, and C. One can see from the list below the various fields of physics, astronomy and optics applied from the presentations given by the undergraduates who participated in the symposium.

SESSION IA. ASTRONOMY

Period-Color Relations at Maximum/Minimum Light for Sloan Digital Sky Survey RR Lyraes
System Development for Projecting Firefly's Orbit Location
Searching for Life on Other Planets Using ANNs
Classifying Near Earth

SESSION IB. QUANTUM OPTICS AND PLASMA PHYSICS

Generation of Optical Vector Beams by Spatial Light Modulation
Creating more Qubits with Spatial Mode Entanglement
Search for an Entanglement Measure for N-Qubit States via Phase Symmetry
Laser Induced Florescence Measurement of Ion Temperatures of Interacting Magnetic Flux Ropes in Argon Plasma

SESSION II. POSTER SESSION

Improved design for a multibeam femtosecond Yb:KGW oscillator
Analysis of GALFACTS Data for the Study of Variable Radio Sources
Monitoring of spectral emissions using the Compact Spectrometer Array diagnostic on NSTX
The NIFFTE TPC Gas Handling System,
Design and Implementation of a Timing Control System for use in a Bose-Einstein Condensate (BEC) Experiment
Deuteron Formation for Big Bang Nucleosynthesis Models
Localization of a Hole on an Adenine-Thymine Radical Cation in B-Form DNA in Water
The Design and Construction of a Deposition Chamber and Laser Interferometer for the Study of Thin Metal Films
Accretion Processes in Class 0/I Protostars
Atomic Layer Deposition of TiO₂ Thin Films

SESSION IIIA. ASTRONOMY II

The development of photometry/extinction/database modules for the Chimera Robotic Telescope System
Calibration routines for the Chimera Robotic Telescope Control System
Sample Images from the Chimera Robotic Telescope Control System: summer 2010

SESSION IIIB. BIOLOGICAL/MEDICAL PHYSICS

Biominerals Structure and Strength of Barnacle Exoskeletons
The Effect of Ultraviolet Sunlight on the Survival of e. Coli: Disassembling Existent Biofilms
Cell Classification based on Artificial Neural Networks
MR Spectroscopic Imaging with MIDAS and Matlab

SESSION IVA. CONDENSED MATTER PHYSICS

Anomalous diffusion of random walkers on a disordered lattice with quenched persistence

Controlling the Sample Temperature in a Vacuum Thin Film Deposition Chamber
Indium Thin Film XRD Characterization and Electrical Analysis
The Kondo Problem: A Toy Model for Renormalization
Water Desorption from Various Ferroelectric and Dipole Oriented Polymers

SESSION IVB. NUCLEAR AND PARTICLE PHYSICS

Design and Construction of a Compact 2 MeV Proton Cyclotron - "The Cyclotron Kids"

Designing an algorithm for a three-dimensional Hough transform of the reconstruction of low-energy event

Particle Detector Design Using Delay Line Technique to Determine Anode Position
Siena's Muon Detector

Neutron-Induced Deuteron Breakup

SESSION IVC. EXPERIMENTAL TECHNIQUES

A Mutual Inductance Bridge for Electric and Magnetic Measurements

Comparative Studies of electrical and mechanical Chaotic Systems

Dynamics of a Plasma Gun

Using a Star to See Stars

Room Acoustics - Measurement and Analysis

After the luncheon the symposium special was playing the Physics Jeopardy Game for fun, or the option of attending the ASNY special lecture on "54 Possible Habitable Planets". Most of the participants of the Jeopardy Game were the presenters of the conference. Five teams had 6 people, the Sixth team had four. April 9, 2011 was Open House Recruiting at the University of Rochester, we had two prospective undergraduates visit and invited them join the fun and that made team six, including myself and one other presenter. The chair of the conference, Professor Frank Wolfs, was the host/spokesperson of the game. The Physics Jeopardy Game last about an hour and half, with laughter from everyone as the physics questions were being read and beepers were being pushed and answers were being shouted.

The conference continues to make modifications to improve efforts and support giving undergraduates opportunities to work with their advisors and present their work in the fields of physics, astronomy and optics, while maintaining the innovation of being one of the best Regional Zone 2 conferences offered annually. Enclosed is an expense report, CD with pictures from both RSPS and ASNY and a RSPS program.