XXXV – ROCHESTER SYMPOSUM FOR PHYSICS (ASTRONOMY AND OPTICS) STUDENTS
SPS ZONE 2 REGIONAL MEETING

PROGRAM

8:15 AM – 8:45 AM: REGISTRATION AND POSTER SETUP (B&L LOBBY)

8:45 AM: WELCOME: PROF. FRANK WOLFS, UNIVERSITY OF ROCHESTER (B&L 109)

9.00 AM – 10:00 AM: SESSION IA. NUCLEAR AND PARTICLE PHYSICS (B&L 109)

SESSION CHAIR: JOSEPH EBERLY, UNIVERSITY OF ROCHESTER

9:00 Remote Operation of a Farnsworth-Hirsch Fusor
Kyle Craft, Houghton College

9:15 Observation of Coherent Production of K^+ in Neutrino Interactions on Carbon Nuclei
Ziyue Wang and Chris M. Marshall, University of Rochester

9:30 The Hadron Resonance Gas Model at Various Heavy-Ion Collision Energies
Bradley Miles, Colgate University

9:45 Study of Next-to-Leading Order QCD and Electroweak Corrections to Higgs Boson Production in the Bottom Quark Fusion Process
Lisong Chen, University at Buffalo

9:00 AM – 10:00 AM: SESSION IB. ASTRONOMY AND ASTROPHYSICS (B&L 106)

SESSION CHAIR: PROF. ANTHONY CLARK, UNITED STATES MILITARY ACADEMY

9:00 Simulating Outrigger Tanks around the HAWC Gamma Ray Observatory
Ryan Rubenzahl and Segev BenZvi, University of Rochester

9:15 What it Takes to Make an Observatory Operational
Abigail Daniel and Kristopher Korzan, United States Military Academy

9:30 Using the Galaxy Correlation Function to Constrain the Nature of Dark Matter
Elijah Beaudin, Dr. John Moustakas and Dr. Matthew Bellis, Siena College

9:45 Mission Analysis of the NSF CubeSat Firefly
David Knapick, Siena College

9:00 AM – 10:00 AM: SESSION IC. INSTRUMENTATION/EXPERIMENTAL TECHNIQUES (B&L 407)

SESSION CHAIR: PROF. GRAZIANO VERNIZZI, SIENA COLLEGE

9:00 Implementing Field-Programmable Gate Array Technology with a Neutron/Gamma Ray Pulse Shape Discrimination Algorithm
Michael Englert, Siena College

9:15 An In-Depth Analysis of Dust Particles With SEM
Jack Rogers, Siena College

9:30 Design and Construction of an X-ray Diffractometer
Margaret Kirkland, Houghton College

9:45 Design and Construction of An Atomic Force Microscope
Jonathon Yuly, Houghton College

10:00 AM – 10:30 AM: SESSION II. POSTER SESSION (LOBBY AND B&L 208)

Progress Towards an LES Wall Model Including Unresolved Roughness
Kyle Craft and Andrew Redman, Houghton College

Doubling the 1.98GHz Pulse Rate of an Optical Comb Generator for Precision Time-base Calibration of Streak Cameras.
Rahman Ejaz, University of Rochester

Vortex and Breather Collisions in Josephson Junction Ladder
Usman Ghani, Colgate University

Characterization of Electron Showers in the MINERvA Test Beam Detector
Spencer Griswold and Amy Filkins, Clarkson University and SUNY Geneseo

Classifying Frog Calls Using Gaussian Mixture Model and Locality Sensitive Hashing
Kathryn Hollowood, Olatide Omojaro, Dalwinderjeet Kular, Eraldo Rebeiro Ph.D., Florida Institute of Technology

Electric Transport of Organic Polymer Thin Film Semiconductors
Nicholas Jira, Vincent Debiase, Ildar Sabirianov and Carolina C. Ilie, SUNY Oswego

Synchronization of Josephson Junction Neuron Circuits
Kidane Kebede and Kenneth Segall, Colgate University

Design and Characterization of Single and Double Layer Polyaniline: Poly(L-lactic) Acid Thin Films for Human Mesenchymal Stem Cell (hMSC) Classification Applications
Rachel Maizel, Emily Laurilliard and Kim Michelle Lewis, Rensselaer Polytechnic Institute

Polarization Forces felt by Chiral Molecules
Joshua Mills and Enrique Galvez, Colgate University

Cosmic Ray Detection with Scintillation Detectors
Haejun Oh and Dr. Seongtae Park, University of Rochester and Center for Axion and Precise Physics (CAPP) at Institute for Basic Science (IBS) in Daejeon, Republic of Korea

A Test of the Validity of Inviscid Wall-Modeled LES
Andrew Redman and Kyle Craft, Houghton College

Trends in Neuro-Fuzzy Networks: Frequent Issues & Novel Approaches
Marie T. Romano, SUNY Oswego

Simulating the Penetrating Power of High-Energy Particles in HgCdTe Detector
Joshua Rosser, University of Rochester

Indirect Detection of Extrasolar Liquid Water
Anthony Terzolo and Melissa A. Morris, SUNY Cortland

Modeling Resonance Ionization
Jonathan Zeosky, Colgate University

10:30 AM – 11:45 AM: SESSION IIIA. NUCLEAR AND PARTICLE PHYSICS (B&L 109)

SESSION CHAIR: PROF. CANDICE FAZAR, ROBERTS WESLEYAN COLLEGE

10:30 Efficiency Calibration of NaI Detectors for Measuring the $^{12}C(n, 2n)^{11}C$ Cross Section
Thomas Eckert, Houghton College

10:45 A Low Activity Mössbauer Source to Test General Relativity using the Transverse Doppler Effect
August Gula, Houghton College

11:00 Modifications to the Houghton College Cyclotron
Laurel Vincett, Houghton College

11:15 Searching for Neutron-Antineutron Annihilations at Daya Bay
Adam Dukehart, Siena College

11:30 Silicon Tracker for CMS Detector at CERN: R&D Phase II Upgrade
Jack Valinsky, Professor Regina Demina, Sergey Korjenevski, University of Rochester

10:30 AM – 11:30 AM: SESSION IIIB. ASTRONOMY AND ASTROPHYSICS (B&L 106)

SESSION CHAIR: ERIC MAMAJEK, UNIVERSITY OF ROCHESTER

10:30 Renewable Energy Storage: A Heavy Solution to a Heavy Problem
Kevin Osse, Siena College

10:45 Making Exoplanets Great Again
Cody Ciaschi and John Moustakas, Siena College

11:00 Advanced Optics Imaging
Shane Linehan, Siena College

11:15 Crustal Failure on Icy Moons and Satellites from a Strong Tidal Encounter
Alice C. Quillen, David Giannella, John G. Shaw, Cindy Ebinger, University of Rochester

10:30 AM – 12:00 PM: SESSION IIIC. CONDENSED MATTER PHYSICS (B&L 407)

SESSION CHAIR: PROF. MOHAMMED TAHAR, SUNY BROCKPORT

10:30 Elastic Buckling of Pored Membranes
Sarah Carkner, Graziano Vernizzi, Siena College

10:45 From Viruses to Fullerenes: Monte Carlo Studies of Polyhedral Nanostructures
Joey Rowley, Graziano Vernizzi, Siena College

11:00 Effect of Deposition Rate on RMS Roughness of Indium Thin Films
Matthew Andrews and Zachary Robinson, SUNY Brockport

11:15 Design and assembly of inert gas annealing chamber for aluminum nitride films
Heather LaVallee and Zachary Robinson, SUNY Brockport and Virginia Anderson, Neeraj Nepal and Charles Eddy Jr., U.S. Naval Research Laboratory

11:30 Phase Transition in Vanadium Dioxide Nanostructures
Luke Lyle, University at Buffalo

11:45 The Optical Dynamics of Liquid Crystals. An investigation of the dynamics and characteristics of Nematic Liquid Crystals for use in the optical field
Nathan Fritz, Colgate University

12:00 PM – 1:00 PM: LUNCH (DANFORTH DINING HALL - BLDG 48 ON THE MAP AT THE END OF THE PROCEEDINGS

1:00 PM – 2:00 PM: PHYSICS JEOPARDY (B&L 109)

2:00 PM – 3:00 PM: SESSION IVA. NUCLEAR AND PARTICLE PHYSICS/OTHER (B&L 109)

SESSION CHAIR: PROF. MARK JULY, HOUGHTON COLLEGE

2:00 Track construction from nuclear recoils in detector gas
Samuel Jung, Oliver Di Nallo and Rebecca Jeffery, United States Military Academy

2:15 Finding the Differential Scattering Cross Section of High Energy Neutrons
CDT Alix Idrache, United States Military Academy

2:30 Motorized Control of Radio Telescope
Debra Johnson, Siena College

2:45 Constraining uncertainties in Climate Change: measuring the reflective and absorptive properties of water vapor
Danielle Moruzz, Siena College

2:00 PM – 3:00 PM: SESSION IVB. BIOLOGICAL PHYSICS, EDUCATIONAL PHYSICS AND QUANTUM OPTICS (B&L 106)

SESSION CHAIR: PROF. BRANDON HOFFMAN, HOUGHTON COLLEGE

2:00 Balanus Amphitrite Atomic Disorder in Differing Environments
Stephanie Warnken and Dr. Rebecca Metzler, Colgate University

2:15 Conservation of Momentum
Miranda Wharram, SUNY Brockport

2:30 Quantum communication with Alice and Bob
Tyler Godat, University of Rochester

2:45 Harmonic Vibrational Frequencies: Approximate Global Scaling Factors for the TPSS, M06, M08, and M11 functional families using common basis sets
CDT Roberts G. Nelson, United States Military Academy

2:00 PM – 3:15 PM: SESSION IVC. INSTRUMENTATION/EXPERIMENTAL TECHNIQUES (B&L 407)

SESSION CHAIR: PROF. MARK ROSENBERRY, SIENA COLLEGE

2:00 Water Level Control of a Two Tank System
Rik Brown, Siena College

2:15 MightyOhm Geiger Counter Sensitivity
Matthew Tenorio, Siena College

2:30 Worrying About Finding a Date with a Best-Fit Line
Brendan Sheehan, Colgate University

2:45 Aberration Corrected Electron Optics for Next Generation Streak Tube Design
Jeremy Hassett, University of Rochester

3:00 Design of an apochromatic diffraction-limited collection lens system for the VISAR/SOP diagnostic
Benjamin Saltzman, University of Rochester