

**XL RSPS – ROCHESTER SYMPOSIUM FOR PHYSICS, ASTRONOMY AND OPTICS STUDENTS
SPS ZONE 2 REGIONAL MEETING**

PROGRAM

8:00 AM – 8:30 AM: REGISTRATION AND POSTER SETUP (B&L LOBBY)

8:30 AM: WELCOME: PROF. FRANK WOLFS, UNIVERSITY OF ROCHESTER (B&L 109)

9:00 AM – 10:00 AM: SESSION IA. ASTRONOMY AND ASTROPHYSICS (B&L 109)

SESSION CHAIR: PROF. CANDICE FAZAR, ROBERTS WESLEYAN COLLEGE

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| 9:00 AM | Searching for Core-Collapse Supernovae with High-Energy Neutrinos at IceCube
Thomas Ahrens
University of Rochester
Advisor: Prof. Segev BenZvi |
| 9:15 AM | Determining the metallicity gradient across galaxies in SDSS MaNGA
Nathaniel Brunacini
University of Rochester
Advisor: Prof. Kelly Douglass |
| 9:30 AM | Testing the Robustness of ConKer on the Intergalactic Medium: A New Method of Measuring the 2-Point Correlation Function of the Universe's Neutral Hydrogen Gas
Joshua Ratajczak, Zachery Brown, Regina Demina, Gebri Mishtaku
University of Rochester
Advisors: Prof. Kelly Douglass, Prof. Regina Demina, Dr. Satya Gontcho A Gontcho |
| 9:45 AM | Spectroscopic Search for Transients using the Dark Energy Spectroscopic Instrument
Edmund Sepeku
University of Rochester
Advisor: Prof. Segev BenZvi |

**9:00 AM – 10:00 AM: SESSION IB. QUANTUM OPTICS & CONDENSED MATTER PHYSICS
(B&L 106)**

SESSION CHAIR: PROF. ZACHARY ROBINSON, SUNY BROCKPORT

- 9:00 AM **Hong-Ou-Mandel Interference with a Fibered Beam Splitter**
Nicholas S. DiBrita
Colgate University
Advisor: Prof. Enrique J. Galvez
- 9:15 AM **Quantum Mueller Polarimetry**
ChanJu (Zoe) You
Colgate University
Advisor: Prof. Enrique J. Galvez
- 9:30 AM **Demonstration of phase transitions using a 1D longitudinal mechanical topological insulator**
Parker Fairfield, Luke Thatcher, Juan Merlo-Ramírez
Vassar College
Advisor: Prof. Juan Merlo-Ramírez
- 9:45 AM **Annealing and Characterization of Zinc Doped Niobium Oxide for Neuromorphic Computing Applications**
Emma Sargent, Alex Mesiti, Nicole Zhe, Andrew Rowley, James Michels, Zachary Robinson, Karsten Beckmann, Nate Cady, Timothy Walters, Hans Cho, Alex Kozen
SUNY Brockport
Advisor: Prof. Zachary Robinson

10:00 AM – 11:00 AM: SESSION II. POSTER & CHAPTER EXHIBITION SESSION (B&L LOBBY & 203H)

An Experiment to Simulate Trapping and Detection of Radioactive Isotopes Produced in ICF Implosions

Adam E. Brown, Micah J. Christensen, Micah K. Condie, Mark Yuly, James G. McLean, Stephen J. Padalino, Chad J. Forrest, Thomas C. Sangster, Sean P. Regan

Houghton College

Advisor: Prof. Mark Yuly

Producing the $2\text{H}(\text{d},\text{n})\text{3He}$ reaction with the Houghton College Cyclotron

Andrew Hotchkiss, Joshua Bowman, and Mark Yuly

Houghton College

Advisor: Prof. Mark Yuly

Statistical Effects of Synthetic Template Mismatch with Model DEIMOS Observations

Christos Kakogiannis

Union College

Advisor: Prof. Jonathan Marr

Enabling Unsupervised Learning in a Josephson Junction Neural Circuit

Eric Matt

Colgate University

Advisor: Prof. Ken Segall

Using a Numerical Model to Investigate the Analytical Limits of Thermal Diffusion

Jamie Woodworth

Ithaca College

Advisor: Prof. Matthew C. Sullivan

An Ambient Air Scanning Tunneling Microscope to Study the Surfaces of Thin Metal Films

Joshua Wilson and Brandon Hoffman

Houghton College

Advisor: Prof. Brandon Hoffman

Deep Sky Astrophotography & Detecting the Properties of an Eclipsing Binary-Star System Using Differential Transit Photometry

Marvin Lopez, Richard McCoy

Hamilton College

Advisor: Prof. Adam Lark

A New Evaporator for the Houghton College Deposition Chamber

Matthew Bowman and Brandon Hoffman

Houghton College

Advisor: Prof. Brandon Hoffman

Phase Unwrapping for Interferometry using a Radial Basis Function Neural Network

Aidan Bachmann and Pierre Gourdain

University of Rochester

Advisor: Prof. Pierre Gourdain

Unsupervised Learning in Josephson Junction-Based Spiking Neural Networks

Raluca Ghilea

Colgate University

Advisor: Prof. Ken Segall

Synthesizing Iron Oxide Nanoparticles for Water Purification

Ryan O'Connor, Sam Lotemple, Dr. Kristen Repa

SUNY Brockport

Advisor: Prof. Kristen Repa

Creating an Interactive Simulation for Rotating Reference Frames

Ted Mburu, Antara Sen

Ithaca College

Advisor: Prof. Colleen Countryman

Simulating Low Temperature Detector Pulse Streams and Developing Edge Triggers

Timothy R. Ockrin and Katrina E. Koehler

Houghton College

Advisor: Prof. Katrina Koehler

Unsupervised Learning In Josephson Junction Circuit

Will Friend

Colgate University

Advisor: Prof. Ken Segall

11:00 AM – 12:00 PM: SESSION IIIA. ASTRONOMY AND ASTROPHYSICS (B&L 109)

SESSION CHAIR: PROF. KA-WAH WONG, SUNY BROCKPORT

- 11:00 AM **Interior Luminosity Curves of Cepheid Variables**
Michele Manno, L. Samson, S.Kalici, H. Randall,
D. Podos, N. Proietti, AJ Chalmers, S. Das, E. Bellinger,
A. Bhardwaj, S. Kanbur
SUNY Oswego
Advisor: Prof. Shashi Kanbur
- 11:15 AM **Linearized Stellar Pulsation Calculations for 3 Types
of Variable Star**
Hugh Randall, A. Chalmers, N. Proietti, S. Kalici,
M. Manno, D. Podos, S. Kanbur, E. Bellinger, S. Das,
A. Bhardwaj
SUNY Oswego
Advisor: Prof. Shashi Kanbur
- 11:30 AM **Applying ML Methods to blc1: Breakthrough Listen's
First Signal-of-Interest**
Zach Yek, Sofia Sheikh, Bryan Brzycki, Peter Ma,
Dominic LeDuc, Matt Lebofsky, Vishal Gajjar,
Steve Croft
SUNY Fredonia
Advisor: Prof. Sofia Sheikh
- 11:45 AM **Decomposition of Galactic Rotation Curves**
Yifan Zhang
University of Rochester
Advisor: Prof. Kelly Douglass

**11:00 AM – 12:00 PM: SESSION IIIB. NUCLEAR AND PARTICLE PHYSICS /
INSTRUMENTATION & EXPERIMENTAL TECHNIQUES (B&L 106)**

SESSION CHAIR: PROF. MARK YULY, HOUGHTON COLLEGE

- 11:00 AM **Observing Monoenergetic KDAR Neutrinos in the
ICARUS Detector**
Joseph Vargas
SUNY Fredonia
Advisor: Prof. Chris Marshall
- 11:15 AM **Deuterium-Deuterium Fusion in the Houghton
College Cyclotron**
Joshua Bowman, Andrew Hotchkiss and Mark Yuly
Houghton College
Advisor: Prof. Mark Yuly
- 11:30 AM **The Houghton College Interferometer**
Noah Klein and Brandon Hoffman
Houghton College
Advisor: Prof. Brandon Hoffman
- 11:45 AM **Construction and Calibration of the Houghton X-ray
Diffractometer**
Nathaniel Davie and Brandon Hoffman
Houghton College
Advisor: Prof. Brandon Hoffman

**12:00 PM – 2:00 PM: LUNCH, PHYSICS CAREER TALK BY DR. RACHEL IVIE & PHYSICS
JEOPARDY (RUSH RHEES LIBRARY – HAWKINS-CARLSON ROOM)**

2:00 PM – 2:45 PM: SESSION IVA. ASTRONOMY AND ASTROPHYSICS (B&L 109)

SESSION CHAIR: PROF. LINDA TSENG, COLGATE UNIVERSITY

- 2:00 PM **NuSTAR Observation of the TeV-Detected Radio Galaxy: 3C 264**
Colin Steiner, Ka-Wah Wong, Dacheng Lin,
Jimmy Irwin, Rodrigo Nemmen
SUNY Brockport
Advisor: Prof. Ka-Wah Wong
- 2:15 PM **Predicting the IceCube Response to Neutrino Bursts from Core Collapse Supernovae**
Xinyue Wu
University of Rochester
Advisor: Prof. Segev BenZvi
- 2:30 PM **Measuring Peculiar Velocities with the Dark Energy Spectroscopic Instrument using the Tully-Fisher Relation**
Navya Uberoi
University of Rochester
Advisors: Prof. Segev BenZvi, Prof. Kelly Douglass

2:00 PM – 3:00 PM: SESSION IVB. BIOLOGICAL PHYSICS / OTHER (B&L 106)

SESSION CHAIR: PROF. KATRINA KOEHLER, HOUGHTON COLLEGE

- 2:00 PM **Mechanosensitivity of Epithelial Layer Maturation**
Joseph Glichowski
University of Rochester
Advisor: Prof. Dan Bergstralh
- 2:15 PM **Mobile Observations of Major Methane Sources in
New York State**
Jacob Cooney
Ithaca College
Advisor: Prof. Eric Leibensperger
- 2:30 PM **Annealing of Titanium Doped Niobium Dioxide**
Alex C. Mesity, Emma G. Sargent,
Zachary R. Robinson, Carl A. Ventrice Jr.,
Karsten Beckmann, Nate Cady, Matthew Sullivan,
Tim Walters, Hans Cho, Alex Kozen
SUNY Brockport
Advisor: Prof. Zachary Robinson
- 2:45 PM **Characterization of niobium-oxide devices**
Paul Suflita
SUNY Brockport
Advisor: Prof. Zachary Robinson