

# Senior Thesis Presentations Part 1

*Department of Physics, Oregon State University*  
*Tuesday June 6, 2023*

**3:00 PM Joseph Stephens** (advised by Dr McIntyre)

"A Simplified Method for Simulating Ballistic and Diffusive Motion in a Brownian System"

*Speaker Biography:* Joseph is interested in Nuclear Security. He is graduating with a degree in Physics and will start his career at Los Alamos National Laboratory.

**3:12 PM Brendan Snyder** (advised by Dr McIntyre)

"Using the Langevin Equation to Verify a Single-Particle Brownian Motion Simulation"

*Speaker Biography:* Brendan is graduating with a BS in Physics. He grew up in Joshua Tree, California and briefly attended community college before transferring to Oregon State University in 2020. After graduation, Brendan will be starting a job as a Research Scientist at Dynetics in Huntsville, Alabama.

**3:24 PM Austin Erickson** (advised by Dr Hadley)

"Relativistic Ray Tracing: Visualizing Curved Space-Time Towards Locating Neutron Stars"

*Speaker Biography:* Austin is a 4<sup>th</sup> year physics major with a fascination with relativity, non-Euclidean geometry, and computational physics. Before graduating in the Fall of 2023, Austin plans to extend his current research in relativistic ray tracing and apply it to locating neutron stars in real images. After graduation, Austin plans to gain experience through internships. After which, Austin plans to attend graduate school starting in the Spring of 2024 to pursue research in computational astrophysics.

**3:36 PM Andrew Ashby** (advised by Dr Siemens)

"Checking for Noise Model Consistency Between the NANOGrav 12.5- and 15-Year Data Sets"

*Speaker Biography:* Andrew is graduating with a BS in physics with a computational physics option and a minor in computer science. He currently plans to attend graduate school in 2024 and continue researching pulsars with the NANOGrav collaborative.

**3:48 PM Logan Holler** (advised by Dr Woods, Nuc. Eng.)

"Tabletop Fusion Reactors: Construction and Testing of a Demonstration Inertial Electrostatic Confinement Fusor"

*Speaker Biography:* Logan is graduating with a BS in Physics, a minor in Nuclear Science and Engineering, and a minor in Mathematics. After graduation, Logan will be hired by Brian Woods to continue this design project to its completion. Once complete, Logan intends to pursue a doctorate in physics, specifically focusing on nuclear fusion reactor research.

**4:00 PM Sully Bailey-Darland** (advised by Dr Brown, Pharm.)

"Model effectiveness in time-resolved spectroscopy: new statistical approaches to uncertainty and model selection for global analysis"

*Speaker Biography:* Sully is graduating with degrees in physics and mathematics, and a minor in chemistry. Starting freshman year he began working in Dr. Kevin Brown's lab on computational linguistics, and in his sophomore he also joined Dr. Chong Fang's ultrafast spectroscopy research group. After graduating, he will attend Cornell University to pursue a PhD in physics.

**4:12 PM Jay Shin** (advised by Dr Schneider)

"Computational Study of the Structure of Indium Alloys at Low Temperatures Using *ab initio* Methods"

*Speaker Biography:* Jay is graduating from OSU with a BS in physics. Before attending OSU in 2020, he studied Electrical Engineering in South Korea. He is planning to move back to South Korea and continue his study in physics after graduation.

**4:24 PM Micah Toll** (advised by Dr Walsh)

"A Machine Learning Model for Predicting Student Homework Success and Studying the Structure of Homework Questions"

*Speaker Biography:* Micah is graduating this June with a BS in Physics and a BS in Mathematics. At Oregon State University, he conducted physics education research with Dr. KC Walsh. He plans to enter industry and work in data science.

# Senior Thesis Presentations Part 2

*Department of Physics, Oregon State University*

*Tuesday June 13, 2020*

**3:00 PM Nathan Johnson** (advised by Dr. Lee)

“Time Resolved THz Spectroscopy of Photocarrier Dynamics in WSe<sub>2</sub>”

*Speaker Biography:* Nathan is graduating at the end of Fall term 2023. He grew up in California, and served a term in the Army before pursuing an education at Oregon State University. Under Dr. Yun-Shik Lee’s advising he researched photocarriers dynamics. After earning his degree, he plans to pursue a career in optics, quantum computing or machine learning.

**3:12 PM Zishi Chen** (advised by Dr. Qiu)

“Computational Study of the Electrostatic Interaction between Kinesin-5/BimC and the Microtubule”

*Speaker Biography:* Zishi is an undergraduate student at OSU and graduating with a Bachelor of Science degree in Physics. He worked in Dr. Qiu's Biophysics Lab for his undergraduate research. He grew up in the People's Republic of China and entered OSU in the United States for deeper learning about modern physics. He plans to pursue a Master of Science degree in Physics after he finishes the undergraduate program.

**3:24 PM Nelson Kangethe** (advised by Dr. Craig)

“Time-Independent Degenerate Perturbation Theory”

*Speaker Biography:* Nelson is an international student from Nairobi, Kenya. He will be receiving a Bachelor of Science in Physics and Computer Science. During his time at OSU, he conducted research in multiple labs in the Physics Department and worked with several student organizations.

**3:36 PM Skylar Farmer** (advised by Dr. Tate)

“Predicting the Percentage: Relating the Refractive Index to Effective Medium Theory in Combination Dielectric Films”

*Speaker Biography:* Skylar is graduating from OSU with a Bachelor of Science degree in physics. She grew up in Medford, Oregon where she attended South Medford High School. During her time as an undergraduate at OSU, she conducted research under Dr. Janet Tate. After graduation she plans to enter the industry.

**3:48 PM Max Siebersma** (advised by Dr. Craig)

“The particle on a ring in polymer quantum mechanics: A quantum cosmology analogue on a compact space”

*Speaker Biography:* Max is graduating with degrees in physics and mathematics. During his time at OSU, Max has worked with Dr. David Craig as part of the quantum mechanics and quantum cosmology theory group for three years. He has also worked as a Paradigms learning assistant for two years. After graduation, Max will take a gap year to work and hike the PCT before attending a graduate program in either mathematics or theoretical physics.

**4:00 PM Basie Seibert** (advised by Dr. Craig)

“Investigating Polymer Quantum Mechanics: Mathematical Formulation, the Particle on a Ring, and Time Evolution”

*Speaker Biography:* Basie is a graduating undergraduate in both physics and mathematics. While at OSU, Basie was a part of Dr. David Craig’s research group in theoretical quantum mechanics and quantum cosmology for two years. Basie was also an undergraduate LA for the Paradigms in Physics courses for the past two years, and the General Physics sequence for the past three years. In the fall, she will be attending the University of New Mexico as a Ph.D. student in the center for quantum information and control (CQUIC) research group.

**4:12 PM Rebecca Munk** (advised by Dr. Ostroverkhova)

“Modeling Optical Reflection and Electric Field Intensity in Organic Semiconductor Microcavities”

*Speaker Biography:* Rebecca is graduating with a B.S. in physics and mathematics. They grew up in Lebanon, Oregon and developed an interest in physics while participating in their high school robotics team. Rebecca will be continuing their physics education by pursuing a PhD in physics at University of Washington in Fall 2023.