

Physics Senior Thesis Mini-Conference

Tuesday June 4th, 2019 in Weniger 304

All students and faculty invited to attend

3:00pm - Michael Trumbull (advisor Liz Gire)

"Reasoning with multiple representations: A parallel plate capacitor"

Speaker Biography: Michael Trumbull is an undergraduate at OSU interested in Physics Education Research (PER) with aspirations to become a physics educator. Michael is graduating with a degree in Physics and will continue his studies at The University of Oregon in Optical Materials and Devices.

3:12pm - Noah Langlie (advisor Vrushali Bokil)

"Traveling wave analysis of non-linear maxwell models with applications to non-linear optics"

Speaker Biography: Noah Langlie is graduating with degrees in physics and mathematics with a minor in chemistry. He grew up in North Bend, Oregon before coming to Corvallis to study at Oregon State University. At Oregon State, he researched qualitative behavior of Maxwell models. He is a master's student in progress at OSU and intends to complete his degree at the end of next year. After earning his master's degree, he intends to pursue a doctorate, ultimately to research applied numerical analysis as a professor.

3:24pm - Josh Ramm (advisor David McIntyre)

"Anti-Reflective Films: Spectroscopy and Ellipsometry of Porous Films"

Speaker Biography: Josh Ramm is receiving a Bachelor of Science in Physics with a minor in Chemistry from Oregon State in June 2019. During his time at OSU he conducted research with Dr. David McIntyre in thin film spectroscopy. Josh is starting the Industrial Master's Program at University of Oregon in June 2019 after which he will be working in industry.

3:36pm - Aaron Goschie (advisor David McIntyre)

"Exploiting Diffraction Orders from a Phase-Limited SLM to Remove and Model Zernike Aberrations"

Speaker Biography: Aaron Goschie is receiving a Bachelor of Science in Physics with a minor in Computer Science. Before attending college, he graduated from Tualatin High School in Oregon and spent most of his early years writing software for various hobby projects. After deciding to pursue Physics in lieu of Computer Science, Aaron wants to continue bringing these two disciplines closer together in the field of Adaptive Optics. Finally, he plans to enter industry and eventually attend a graduate program which will bring him closer to his goal.

3:48pm - Abigail Kimbrough (advisor Liz Gire)

"Teaching Gravitational Potential Energy: Student Interaction with Surface Manipulatives"

Speaker Biography: Abigail Kimbrough will be graduating in June 2020 with a Bachelor of Science in Physics and a Bachelor of Science in Education. During the 2019-2020 school year, they will be student teaching in physics and biology classrooms at Crescent Valley High School. After graduation, Abigail plans to teach high school physics in the Pacific Northwest.

4:00pm - Brennan Douglas (advisor Pavel Kornilovich)

"Chiral Topological Defects in Nematic Liquid Crystals and Classical Field Theories"

Speaker Biography: Brennan Douglas grew up and attended high school in Hillsboro, Oregon. He attended Oregon State University in September of 2015 and is graduating in June of 2019 with a double major in physics and computer science. During his time at OSU, he conducted research with Pavel Kornilovich and worked as a Student Software Developer at CASS. After graduation, he will be starting a job as a Software Development Engineer at Amazon in Seattle, Washington in August 2019.

4:12pm - Travis Herring (advisor Liz Gire)

"How physics students use evaluative sensemaking strategies when prompted to reflect in an introductory calculus-based physics course"

Speaker Biography: Travis Herring is a pre-med student graduating in June 2020 with a degree in physics with chemical physics option. He plans to pursue medical school after graduating with an interest in an MD-PhD program.

4:24pm - Cole Gilmore (advisor Ethan Minot)

"Fabrication and Characterization of Graphene Electrolytic Supercapacitors"

Speaker Biography: Cole Gilmore is graduating this year with a degree in physics. He performed research in the Minot nanoelectronics lab. He plans to start the Masters Industrial Internship program at the U of O this coming summer.

4:36pm - Dublin Nichols (advisor Ethan Minot)

"Fabrication and low-temperature measurement of quantum devices"

Speaker Biography: Dublin Nichols is graduating with a Bachelor of Science in Physics and a minor in mathematics. During his time as an undergraduate, he conducted research under Dr. Ethan Minot on nanoelectronic devices and 2D materials. After graduating, Dublin will be continuing his physics education by pursuing a PhD in physics at OSU in Fall 2019, and plans to continue to perform research in the field of solid state physics.

4:48pm - Joe Meyers (advisor Yun-Shik Lee)

"Plasmon Induced Transparency in Terahertz Metamaterial"

Speaker Biography: Joseph Meyers is graduating from Oregon State University with a Bachelor of Science degree in physics, with an optics option. He grew up in Bend, Oregon where he attended Bend Senior High and Central Oregon Community College. He will be attending the University of Oregon in pursuit of an Applied Masters in optical physics beginning June 2019.

5:00pm - Patrick Berry (advisor Janet Tate)

"Characterizing Optical Signatures of TiO₂ Amorphous Precursors"

Speaker Biography: Patrick Berry is graduating from Oregon State University with a Bachelor of Science in Physics in June 2019.

5:12pm - Mateo Estrada Jorge (advisors Zachary Holman, ASU, Ethan Minot, OSU)

"Contact resistance: the return of the Cox and Strack method for heterojunction solar cells"

Speaker Biography: Mateo Estrada is an undergraduate interested in pursuing quantum computation as a future research career. He will attend Oregon State University from Fall 2015 till summer 2020 and will be graduating with a B.S in Physics and in Computer Science. After his studies at OSU, Mateo will pursue a PhD in Computer Science from the University of Waterloo with a focus on Quantum information.

Physics Senior Thesis Mini-Conference 2

Tuesday June 11th, 2019 in Weniger 304, 3:00pm – 5:50pm.

All students and faculty invited to attend

3:00pm - Kelda Diffendaffer (advisor Janet Tate)

“Oxygen’s Effect on Electrical Measurements of TiO₂ Polymorphs”

Speaker Biography: Kelda Diffendaffer is graduating with a B.S. in Physics (option in Chemical Physics) and a minor in Mathematics. Her family runs a small thin film vacuum deposition company, Venture Technology, in Grants Pass, OR. During her years at OSU, Kelda has conducted research for the Center for Sustainable Materials Chemistry (2016) and the Tate Lab (2017-present). She will be interning at a local company, Voxel/NanoVox, over the summer with the intent to continue working in the material science field.

3:12pm - David Haas (advisor Oksana Ostroverkhova)

“Detection of exciton polaritons in organic thin film TES-ADT”

Speaker Biography: David Haas is receiving a Bachelor of Science in Physics, with an option in Applied Physics, from Oregon State University in June 2019. A non-traditional, first-generation college student, he was co-founder and Vice President of the Math and Science Club, the Director of Media and Advertising in Associated Student Government, and peer tutor at Rogue Community College, and Applications Officer of the Society of Physics Students at Oregon State University. David plans to obtain a PhD in Physics and pursue a career in renewable energy research and development.

3:24pm - Sean McDonough (advisor David Roundy)

“Calculating Lift and Drag Forces on Surfboards using a Navier-Stokes Solver and Momentum Conservation”

Speaker Biography: Sean McDonough is graduating with a Bachelor of Science in Physics in June of 2019. His research has focused on the fluid dynamics of recreational surf craft. He plans to apply the problem solving and technical skills acquired in pursuit of his degree to project management in the business world and to continue his passion researching how to build better performing surfboards.

3:36pm - Jesse Weller (advisor Guenter Schneider)

“Beyond Scattering: Identifying the Boundaries of Light Control Through Opaque Materials with a Genetic Wavefront Optimization Algorithm”

Speaker Biography: Jesse Weller grew up in the Pacific Northwest. After the first three years of his undergraduate studies he took a hiatus from school to start an organic farm business, which he owned and operated for six years before returning to finish his degree. In spring 2019, Jesse is receiving a Bachelor of Science in physics with a computational option. He is currently pursuing a Master of Physics degree at Oregon State University in the Accelerated Masters Platform.

3:48pm - John Waczak (advisor David Roundy)

“Drunken Walking: A Novel Brownian Dynamics Simulation for the Mechanochemical Cycle of the Dynein Motor Protein”

Speaker Biography: John Waczak is a senior physics and mathematics undergraduate. John's interests lie in computational physics, mathematical physics, and general relativity. He is a member of Dr. David Roundy's research group where he studies a two dimensional model for the dynein motor protein. Last summer, he participated in an REU at the Harvard-Smithsonian Center for Astrophysics where he studied spherical shock waves in coronal mass ejections. Next year he will begin pursuing a graduate degree in physics at the University of Texas at Dallas.

4:00pm - John Micallef (advisor David Lazzati)

“Deriving relationships between number of observed short gamma ray bursts and viewing angle”

Speaker Biography: John T. Micallef is completing a Bachelor of Science in Physics from Oregon State University in June of 2019. He plans to eventually go to graduate school to further study theoretical physics with a focus on either gravitational, cosmological, or high energy physics. But for the time being he will be doing computational physics research, preferably for LIGO.

4:12pm - Jacob Rogers (advisor David Blunck, Mechanical Engineering)

“Examining Particulate Size Distributions of Alternative Jet Fuels Under Turbulent Flame Conditions”

Speaker Biography: Jacob Rogers is an Oregon local who grew up in Salem, Oregon. He began attendance at OSU in 2016 after transferring from Linn-Benton Community College to finish his education in Mechanical Engineering and Physics. He graduates in June 2019 with dual degrees in Mechanical Engineering and Physics. After graduation he plans to enter the work force in industry with a goal of finding employment in semiconductor manufacturing.

4:24pm - Victor Brequigny (advisor Yun-Shik Lee)

“Terahertz field enhancement in nanoantennas on gallium arsenide”

Speaker Biography: Victor Brequigny was born and raised in Paris, France where he completed his K-12 education. He enrolled at Oregon State university in Fall 2014 and is graduating in Spring 2019 with a Bachelor of Science in Physics. In the last year he conducted research with Dr. Yun-Shik Lee in terahertz spectroscopy. After graduation his plans are to work in the research and development of photonics devices and ultrafast optoelectronics nanodevices before attending graduate school to study ultrafast nonlinear optics.

4:36pm - Troy Tyma (advisor HoeWoon Kim, Mathematics)

“Riesz Transforms on a Sphere”

Speaker Biography: Troy Tyma is a US Navy submarine veteran who is graduating the physics Bachelor of Science program at Oregon State University in June, 2019. Combining his past employment experiences, his Navy leadership experiences, and his knowledge of physics, Troy plans to take his skills into private industry.

4:48pm - Alex Gonzalez (advisors William Hodgkins, Scripps & Bo Sun, OSU)

“Data analysis on the Swellex-96 experiment: Source localization and tracking by matched-field-processing”

Speaker Biography: Alex Gonzalez is graduating with a degree in physics and a minor in mathematics. During his undergraduate he conducted research with Dr. Heidi Schellman for the URSA Engage. Alex completed his summer internship in the summer of 2018 studying ocean acoustics, which became his thesis. After graduation, Alex will be pursuing master’s degree in applied physics at the University of Oregon starting this summer.

5:00pm - Reese Siegel (advisor Liz Gire)

“Understanding Change: Surface manipulative-activities as a tool for addressing student difficulties in Thermodynamics”

Speaker Biography: Reese Siegel began his studies at OSU in the fall of 2016. He will be receiving a Bachelor of Science in Physics with a Mathematical Physics option this spring, 2019. Just after, Reese will begin his graduate studies at the University of Oregon where he is pursuing a Master of Applied Physics in Optics.

5:12pm - Cade Trotter (advisor David Roundy)

“Multi-Grand, Multi-Canonical, Flat Histogram, Monte Carlo Simulations for the Square Well Fluid”

Speaker Biography: Cade Trotter is graduating with a Bachelor’s of Science in Physics, with an option in Optical Physics from Oregon State University in 2019. During his time at O.S.U he worked on MonteCarlo simulations under Dr. David Roundy. After graduation, he will be pursuing a PhD in Electrical Engineering doing a project on free-space optical communication at OSU.

5:24pm - Calvin Henry (advisor Brian Wood, Nuclear Engineering)

“Improving the Gradient Effects of Plasma on a Triple Langmuir Probe”

Speaker Biography. Calvin Henry is graduating with bachelor’s degrees in Physics and Nuclear Engineering. He has engineering experience from a summer internship at Precision Castparts in Clackamas. Calvin has interest in plasma physics and plans on attending graduate school in 2020 to study fusion energy. During his year break, he will travel the length of South America.

5:36pm - Nikita Grigorian (advisor Guenter Schneider)

“A Convolutional Neural Network For Cell Classification”

Speaker Biography. Nikita Grigorian is graduating with a degree in physics and a minor in mathematics. He grew up in Eugene, Oregon with a strong connection to his family in Armenia. As an undergraduate he conducted research with Guenter Schneider into application of neural networks to cellular classification using data from Dr. Bo Sun's lab. After graduation, he intends on pursuing machine learning and working to grow the field in Armenia.