

# 2025 SUMMER *Research* SYMPOSIUM



Office of  
Undergraduate Research  
UNIVERSITY OF SOUTH CAROLINA

Thursday, July 31, 2025    10:00 – 11:15 and 1:00 – 2:15  
Hollings Program Room at the Thomas Cooper Library  
*Sponsored by the Office of Undergraduate Research  
and the Office of the Vice President for Research*

## Morning Session 10:00 – 11:15

### McNair Junior Fellows

#### 1 Controllable Impact Device for Tagged MRI 3D Acquisition

**Peace Aina**, University of South Carolina, Columbia, SC Biomedical Engineering Senior  
Dr. Ahmed Alshareef, University of South Carolina, Columbia, SC Biomedical Engineering

#### 2 Rank Reduction of LSTM Models for Online Vibration Signal Compensation on Edge Computing Devices

**Joshua McGuire**, University of South Carolina, Columbia, SC Computer Engineering, Senior  
Dr. Jason Bakos, University of South Carolina, Columbia, SC Computer Science and Engineering  
Dr. Austin Downey, University of South Carolina, Columbia, SC Mechanical Engineering

#### 3 Semi-Permanent Automated Water Quality Pump for Real-Time Monitoring

**Josh Hager**, University of South Carolina, Columbia, SC Aerospace Engineering, Junior  
Dr. Austin Downey, University of South Carolina, Columbia, SC Mechanical Engineering  
Dr. Jasim Imran, University of South Carolina, Columbia, SC Civil and Environmental Engineering

#### 4 Assessment of UAV-deployed Epoxy-bonded Vibration Sensors on Concrete Structures

**Amanda Sark**, University of South Carolina, Columbia, SC Aerospace Engineering, Junior  
Dr. Austin Downey, University of South Carolina, Columbia, SC Mechanical Engineering  
Mr. Jasim Imran, University of South Carolina, Columbia, SC Civil Engineering

#### 5 Real-Time Thermal Image Topological-Data Analysis for Quality Control and Defect Detection in Laser Powder Bed Fusion Additive Manufacturing

**Thienan Hoang**, University of South Carolina, Columbia, SC Mechanical Engineering, Junior  
Dr. Austin Downey, University Of South Carolina, Columbia, SC Mechanical Engineering

#### 6 Stereo Vision UAV Tracking for Autonomous Structural Health Monitoring Sensor Deployment

**Qi (Mark) Zheng**, University of South Carolina, Columbia, SC Mechanical Engineering & Biological Sciences, Senior  
Dr. Austin Downey, University of South Carolina, Columbia, SC Mechanical Engineering

#### 7 Ground Camera Networks for UAV Distance Calculation and Point-Cloud Rendering

**Nolan Shute**, University of South Carolina, Columbia, SC Mechanical Engineering, Sophomore  
Dr. Austin Downey, University of South Carolina, Columbia, SC Mechanical Engineering

*8 Encapsulating SEC Sensors in Flexible Silicone Wings*

**Patrick Wynne**, University of South Carolina, Columbia, SC Aerospace Engineering, Junior  
Dr. Austin Downey, University of South Carolina, Columbia, SC Mechanical Engineering

*9 Effect of Fabrication Parameters on Morphology and Yield of Polymer Particles for Drug Delivery.*

**Victoria Iacabucci**, University of South Carolina, Columbia, SC Chemical Engineering, Senior  
Dr. Michael Gower, University of South Carolina, Columbia, SC Biomedical Engineering

*10 The Impact of Solvent on Nanoparticle Morphology and Charge for Mucosal Drug Delivery Applications*

**Margaret Davisson**, University of South Carolina, Columbia, SC Biomedical Engineering & Theatre, Junior  
Dr. Robert Gower, University of South Carolina, Columbia, SC Biomedical Engineering  
Mr. Nicholas Colonna, University of South Carolina, Columbia, SC Biomedical Engineering

*11 Hierarchical Honeycomb*

**Isaac Garman**, University of South Carolina, Columbia, SC Mechanical Engineering, Junior  
Dr. Andrew Gross, University of South Carolina, Columbia, SC Mechanical Engineering

*12 Machine Learning-Based Detection of Simulated Malware in FPGA Bitstreams*

**Rye Stahle-Smith**, University of South Carolina, Columbia, SC Computer Engineering, Senior  
Dr. Rasha Elham Karakchi, University of South Carolina, Columbia, SC Computer Science and Engineering

*13 Compact Neurosymbolic AI for On-Chip Trojan Detection in Edge Controllers*

**Darssan Eswaramoorthi**, University of South Carolina, Columbia, SC Computer Engineering, Senior  
Dr. Rasha Elham Karakchi, University of South Carolina, Columbia, SC Computer Science and Engineering

*14 Optimization of Symbolic Accelerators Through Intelligent Graph Simplification*

**Tiffany Yu**, University of South Carolina, Columbia, SC Computer Engineering, Junior  
Dr. Rasha Karakchi, University of South Carolina, Columbia SC Computer Science and Engineering

*15 Developing Efficient Water-Soluble Sacrificial Layers for Transferable Oxide Films in Flexible Electronics*

**Avari Suber**, University of South Carolina, Columbia, SC Mechanical Engineering, Junior  
Dr. Dongkyu Lee, University of South Carolina, Columbia, SC Mechanical Engineering

*16 Enhancing the Efficiency of Thermoelectric Devices Using Exsolved Metal Nanoparticles in Oxide Thin Films*

**Caden Kincaid**, University of South Carolina, Columbia, SC Aerospace Engineering, Junior  
Dr. Dongkyu Lee, University of South Carolina, Columbia, SC Mechanical Engineering  
Mr. Ebenezer Seesi, University of South Carolina, Columbia, SC Mechanical Engineering  
Mr. Mohammad El Loubani, University of South Carolina, Columbia, SC Mechanical Engineering

*17 Condition Assessment of Structural Materials using Non-Destructive Examination and Machine Learning*

**Alex Ervin**, University of South Carolina, Columbia, SC Computer Information Systems, Junior  
**Sam Kolowith**, University of South Carolina, Columbia, SC Mechanical Engineering, Junior  
Dr. Ai Li, University of South Carolina, Columbia, SC Civil Engineering

*18 A Detailed Numerical Investigation of Flow Blurring Atomization*

**Ethan Smith**, University of South Carolina, Columbia, SC Aerospace Engineering, Junior  
Dr. Yue Ling, University of South Carolina, Columbia, SC Mechanical Engineering

19 *Investigating the fitness of cell culture assays for signifying amyloid- $\beta$  neurotoxicity*

**Dorothy Miller**, University of South Carolina, Columbia, SC Biomedical Engineering & Neuroscience, Senior  
Dr. Melissa Moss, University of South Carolina, Columbia, SC Biomedical Engineering  
Mr. Michael Kaven, University of South Carolina, Columbia, SC Biomedical Engineering

20 *Error Assessment of Inverse Methods for Determining Material Properties Using Simulated Images*

**Evan Wey**, University of South Carolina, Columbia, SC Aerospace Engineering, Junior  
Dr. Subramani Sockalingam, University of South Carolina, Columbia, SC Mechanical Engineering

21 *Characterization of Composite Delamination under High Strain Rate Loading*

**Madhan Vital**, University of South Carolina, Columbia, SC Aerospace Engineering, Junior  
Dr. Subramani Sockalingam, University of South Carolina, Columbia, SC Mechanical Engineering

22 *A Physics-Informed Machine Learning Approach for Predicting Aviation Fuel Properties*

**Matthew Burnett**, University of South Carolina, Columbia, SC Aerospace Engineering, Senior  
Dr. Sang Hee Won, University of South Carolina, Columbia SC Mechanical Engineering

23 *Analyzing Flame Extinction in Counterflow Diffusion Flames Using Transport-Weighted Enthalpy to Support Combustion Model Validation*

**Nick Wattenbarger**, University of South Carolina, Columbia, SC Mechanical Engineering, Senior  
Dr. Sang Hee Won, University of South Carolina, Columbia, SC Mechanical Engineering

24 *Designing a Resource-based Maternal Health Chatbot Utilizing Adaptive Nudging*

**Ian Fonzo**, University of South Carolina, Columbia, SC Integrated Information Technology, Senior  
Dr. Dezhi Wu, University of South Carolina, Columbia, SC Integrated Information Technology

25 *Towards a Data Driven Mechanism for Automated Error Correction for Fused Filament Fabrication (FFF)*

**Lewis Davies**, University of South Carolina, Columbia, SC Mechanical Engineering, Senior  
Dr. Thorsten Wuest, University of South Carolina, Columbia, SC Mechanical Engineering  
Mr. Austin Harper, University of South Carolina, Columbia, SC Mechanical Engineering

26 *Full-Scale Testing of Geogrid-Stabilized Railway Ballast Under Progressive Rainfall Condition*

**Nana Boateng**, University of South Carolina, Columbia, SC Civil Engineering, Senior  
Dr. Qian Yu, University of South Carolina, Columbia, SC Civil Engineering

27 *Addressing Secure Authentication Challenges in Embedded Systems*

**Nishant Chinnasami**, University of South Carolina, Columbia, SC Computer Information System, Junior  
Dr. Rasha Karakchi, University of South Carolina, Columbia, SC Computer Science and Engineering

28 *Exploring the Correlation Between Porosity and Surface Roughness in AA6061 Via Laser Powder Bed Fusion*

**Edison Lin**, University of South Carolina, Columbia, SC Mechanical Engineering, Junior  
Prof. Lang Yuan, University of South Carolina, Columbia, SC Mechanical Engineering  
Mr. Can Sun, University of South Carolina, Columbia, SC Mechanical Engineering  
Mr. Sivaji Karna, University of South Carolina, Columbia, SC Mechanical Engineering

29 *Topology-Driven Optimization of Internal Wing Structures via Additive Manufacturing*

**Darius Dash**, University of South Carolina, Columbia, SC Mechanical Engineering, Sophomore  
Prof. Lang Yuan, University of South Carolina, Columbia, SC Mechanical Engineering

30 *Conductive MXene-Polyelectrolyte Fibrous Scaffolds for Neural Regeneration*

**Paul Ward Pratz**, University of South Carolina, Columbia, SC Biomedical Engineering, Junior  
Dr. Nader Taheri-Qazvini, University of South Carolina, Columbia, SC Biomedical Engineering

31 *Vascular Smooth Muscle O-GlcNAc transferase (OGT) is sensitive to biomechanical stress*

**Delaney Johnson**, University of South Carolina, Columbia, SC Biomedical Engineering, Senior  
Dr. Cameron McCarthy, University of South Carolina, Columbia, SC Cell Biology and Anatomy

32 *Optimized Gelatin Methacrylate Synthesis via Advanced pH Control for Superior Crosslinking Efficiency*

**Benjamin Beall**, University of South Carolina, Columbia, SC Chemical Engineering, Senior  
Dr. Nader Taheri-Qazvini, University of South Carolina, Columbia, SC Chemical Engineering/ Biomedical Engineering

## **Computer Engineering**

33 *OralSLAM: Visual Inertial SLAM for 3D Mapping of the Oral Cavity Using a Smart Toothbrush*

**Tsbih Salman**, University of South Carolina, Columbia, SC Computer Engineering, Senior  
**Hammam Salman**, University of South Carolina, Columbia, SC Computer Engineering, Junior  
Dr. Sanjib Sur, University of South Carolina, Columbia, SC Computer Science and Engineering

## **Chemical Engineering**

34 *Preparation and Application of Catalyst Inks for Catalyst-Coated Polybenzimidazole Membranes*

**Saryu Rath**, University of South Carolina, Columbia, SC Chemical Engineering, Senior  
Dr. Benjamin Meekins, University of South Carolina, Columbia, SC Chemical Engineering  
Dr. Sirivatch Shimpalee, University of South Carolina, Columbia, SC Chemical Engineering

35 *Effects of Dopant Acid Concentration and Doping Time on Polybenzimidazole Membranes*

**Samantha Costantino**, University of South Carolina, Columbia, SC Chemical Engineering, Junior  
Dr. Ben Meekins, University of South Carolina, Columbia, SC Chemical Engineering  
Dr. Ishwor Karki, University of South Carolina, Columbia, SC Chemical Engineering  
Dr. Sirivatch Shimpalee, University of South Carolina, Columbia, SC Chemical Engineering

## **REU: Design of Nanomaterials for 21<sup>st</sup> Century Energy**

36 *Designing Platinum Nanoparticles as Catalysts for the Recycling of Polyolefins*

**John Hopkins**, University of Georgia, Athen GA Chemistry, Senior  
Dr. Andreas Heyden, The University of South Carolina, Columbia, SC Chemical Engineering  
Mr. Olajide Bamidele, The University of South Carolina, Columbia, SC Chemical Engineering

37 *Electrochemical Characterization of Cellulose-Based Separators for Secondary Lithium Metal Batteries*

**Anelisse M. Torres Santiago**, University of Puerto Rico, Mayagüez, PR Chemical Engineering, Junior  
Dr. Golareh Jalilvand, University of South Carolina, Columbia, SC Chemical Engineering  
Mr. Hunter McRay, University of South Carolina, Columbia, SC Chemical Engineering

38 *Amine Functionalized Biochar Modification to Improve Carbon Capture*

**William Slater**, Wake Forest University, Winston-Salem, NC Engineering, Junior  
Dr. Jochen Lauterbach, University of South Carolina, Columbia, SC Chemical Engineering  
Mr. Patrick Holcombe, University of South Carolina, Columbia, SC Chemical Engineering

*39 Synthesis and Electrochemical Evaluation of One-Dimensional NiMo-based Catalysts for the Hydrogen Evolution Reaction*

**Nathaniel Baird**, NC State University, Raleigh, NC Chemical Engineering, Junior  
Prof. William Mustain, University of South Carolina, Columbia, SC Chemical Engineering  
Dr. Sriram Mosali, University of South Carolina, Columbia, SC Chemical Engineering

*40 Catalytic Upcycling of High-Density Polyethylene Using Nonthermal Hydrogen Plasma*

**Sofia Romero**, Cornell University, Ithaca, NY Chemical Engineering, Sophomore  
Prof. Zhenmeng Peng, University of South Carolina, Columbia, SC Chemical Engineering  
Mr. Parsa Pishva, University of South Carolina, Columbia, SC Chemical Engineering

*41 Ytria/Alumina Mixed Metal Oxide Support for a Ruthenium-Based Ammonia Decomposition Catalyst*

**Elias Wendt**, University of South Carolina, Columbia, SC Chemical Engineering, Senior  
Dr. Rahat Qazi, University of South Carolina, Columbia, SC SAGE  
Dr. Jochen Lauterbach, University of South Carolina, Columbia, SC Chemical Engineering

*42 Simulation of Heat Pumps (still a work in progress)*

**Charlie Gamble**, University of South Carolina, Columbia, SC Chemical Engineering, Junior  
Dr. Jim Ritter, University of South Carolina, Columbia, SC Chemical Engineering

*43 Liquid Crystal-Templated Strategies for Controlled Catalytic Material Synthesis*

**Judith Shaver**, University of North Carolina, Chapel Hill, NC Biomedical Engineering, Junior  
Dr. Monirosadat (Sanaz) Sadati, University of South Carolina - Columbia, Columbia, SC Chemical Engineering

*44 Optimization of Pyrolytic Bio-oil Upgrading Using Zeolite Catalysts*

**Colby Braden**, University of Alabama, Tuscaloosa, AL Chemical Engineering, Sophomore  
Dr. Jochen Lauterbach, University of South Carolina, Columbia, SC Chemical Engineering  
Mr. Samuel Drummond, The University of South Carolina, Columbia, SC Chemical Engineering

---

## **Afternoon Session 1:00 – 2:15**

### **TRIO McNair Scholars**

*1 The Importance of Understanding the Etiopathophysiology and Timely Diagnosis of Hypovolemic and Distributive Shock*

**Ansley Woodson**, University of South Carolina Upstate, Spartanburg, SC Biology- Sophomore  
Dr. Meeta Banerjee, University of South Carolina, Columbia, SC Psychology

*2 Feeding Equity: The Intersection of Race, Food Security, and Mental Health in Higher Education*

**Isha Patel**, University of South Carolina, Columbia, SC Biological Sciences- Senior  
Dr. Meeta Banerjee, University of South Carolina, Columbia, SC Psychology

*3 Maintaining Wellbeing: The Relationship Between Stress, Coping, and Health Behavior*

**Sonali Tucker**, University of South Carolina, Columbia, SC Psychology- Senior  
Dr. Meeta Banerjee, University of South Carolina, Columbia, SC Department of Psychology

*4 Dopamine vs. Deadlines: The Influence of Social Media on Attention-Deficit Hyperactivity Disorder among College Students*

**Aryana Hughey**, University of South Carolina, Columbia, SC Psychology- Junior  
Dr. Daniel Cooper, University of South Carolina, Columbia, SC Psychology

5 *Mental and Physical Health: How both can impact performance and the healing process within football*

**Raquel Carranza Garcia**, University of South Carolina, Columbia, SC Exercise Science- Junior

Dr. Daniel Cooper, University of South Carolina, Columbia, SC Psychology

6 *Polycystic Ovarian Syndrome: Class, Culture, and Care of Latinas*

**Daniela Lopez**, University of South Carolina Beaufort, Bluffton, SC Biology- Junior

Dr. Florencia Cornet, University of South Carolina, Columbia, SC TRIO McNair Program

7 *The Role of Artificial Intelligence in Teaching Financial Literacy*

**Terryn Patterson-Bryant**, South Carolina State University, Orangeburg, SC Accounting- Senior

Dr. Florencia Cornet, University of South Carolina, Columbia, SC TRIO McNair Program

8 *The Impact of a First-Generation College Student's Understanding of Financial Literacy*

**Marquisha Johnson**, University of South Carolina, Columbia, SC Finance- Senior

Dr. Jamil Johnson, University of South Carolina, Columbia, SC Leadership, Learning Design, and Inquiry College of Education

9 *A Home Away From Home: The Latino Predominantly White Institution (PWI) Experience*

**Lisette Argueta**, University of South Carolina, Columbia, SC Public Health- Senior

Dr. Jamil Johnson, University of South Carolina, Columbia, SC Educational Leadership and Policies

10 *"More Than a Game" How Sports Shape and Shake the Dreams of Black Youth*

**Darren Jean-Francois**, Voorhees University, Denmark, SC Business Major- Senior

Dr. Jamil Johnson, University of South Carolina, Columbia, SC Leadership, Learning Design, and Inquiry College of Education

11 *Songs That Heal: The Effectiveness of a Music Therapy Approach for Treating Depressive Symptoms in Low-SES Adolescent Populations.*

**Collin Taylor**, University of South Carolina, Columbia, SC Psychology & Philosophy- Senior

Dr. Jamil Johnson, University of South Carolina, Columbia, SC Leadership, Learning Design, and Inquiry

12 *Autonomous Navigation Efficiency of a Low-Cost Embedded Rover*

**Jo'Marion Ford-Campbell**, University of South Carolina, Columbia, SC Computer Engineering- Senior

Dr. Jamil Khan, University of South Carolina, Columbia, SC College of Engineering and Computing

13 *Introducing the Rabies Vaccine at a Young Age to Increase Survival Rate*

**Jennifer Gonzalez**, University of South Carolina Aiken, Aiken, SC Clinical Lab Science- Senior

Dr. Jamil Khan, University of South Carolina, Columbia, SC TRIO Ronald E. McNair Scholar Program

14 *Gender and Racial Socialization of Black-White Biracial Americans*

**Aaron McLeod**, University of South Carolina, Columbia, SC Sociology- Sophomore

Dr. Florencia Cornet, University of South Carolina, Columbia, SC English/African-American Studies/ Latin-American Studies/ TRIO

## ***REU: Biological and Chemical Contaminants in Aquatic Ecosystems***

15 *Elemental Stoichiometry of Sinking Particles in the Santa Barbara Basin over the Past 16 Years*

**Nina Coli**, University of South Carolina, Columbia, SC Environmental Science- Senior

Dr. Claudia Benitez-Nelson, University of South Carolina, Columbia, SC School of Earth, Ocean and Environment

16 *The Synergistic Effects of Emerging Contaminants on Freshwater Phytoplankton Biomass*

**Grace Margulies**, University of South Carolina, Columbia, SC Biological Sciences- Junior  
Dr. Jay Pinckney, University of South Carolina, Columbia, SC Biological Sciences and Marine Sciences  
Ms. Cat Schlenker, University of South Carolina, Columbia, SC Biological sciences  
Dr. Tammi Richardson, University of South Carolina, Columbia, SC Biological Sciences and Marine Sciences

17 *Cyanobacterial Dynamics and Phytoplankton Community Structures at Lake Murray (2021-2025)*

**Gavin Madgett**, University of South Carolina, Columbia, SC Marine Science- Senior  
Dr. Jay Pinckney, University of South Carolina, Columbia, SC School of the Earth, Ocean, and Environment

18 *Quantifying and Characterizing Microplastics in Winyah Bay and North Inlet Estuaries, SC*

**Emily Contract**, University of South Carolina, Columbia, SC Marine Science- Senior  
Dr. Tammi Richardson, University of South Carolina, Columbia, SC SEOE

19 *How well does Adsorbable Organic Fluorine Reflect Total PFAS: Method Recovery of Fluorinated Pharmaceuticals*

**Jack Schillat**, Wofford College, Spartanburg, SC Chemistry and Math- Junior  
Dr. Susan Richardson, University of South Carolina, Columbia, SC Department of Biochemistry and Chemistry  
Mr. Haritha Lawan, University of South Carolina, Columbia, SC Department of Biochemistry and Chemistry

20 *Nutrient Legacies in South Carolina Lakes: Precipitation and Land Use as Shaping Forces Over 20 Years (1999-2023)*

**Kaitlyn Lease**, University of South Carolina, Columbia, SC Marine Science- Senior  
Dr. Claudia Benitez-Nelson, University of South Carolina, Columbia, SC School of Earth, Ocean and Environment

**REU: Undergraduate Research in Physics**

21 *Spin-Flip Processes Induced by Magnetic Texture*

**Reagan Stanton**, University of South Carolina, Columbia, SC Physics- Junior  
Dr. Yaroslav Bazaliy, University of South Carolina, Columbia, SC Department of Physics and Astronomy  
Mr. Wiz Maung, University of South Carolina, Columbia, SC Department of Physics and Astronomy

22 *Optimizing Detection of Nonlinear Response Curves of Magnetic Nanoparticles using Magnetic Particle Spectroscopy*

**Dustin Docusen**, Eastern Michigan University, Ypsilanti, MI Physics Research & Mathematics- Junior  
Dr. Thomas Crawford, University of South Carolina, Columbia, SC Physics and Astronomy

23 *Detection of Magnetic Nanoparticle Dynamics in Ferrofluid Using Multi-Coil Magnetic Field Modulation*

**Jamari Blanks**, University of South Carolina, Columbia, SC Physics- Junior  
Dr. Thomas Crawford, University of South Carolina, Columbia, SC Physics and Astronomy

24 *Experimental Study of Proton-Deuteron Elastic Scattering at Intermediate Energies at Jefferson Lab*

**Evrin Gulser**, Arizona State University, Tempe, AZ Physics & Mathematics- Senior  
Dr. Yordanka Ilieva, University of South Carolina, Columbia, SC Physics  
Dr. Pawel Nadel-Turonski, University of South Carolina, Columbia, SC Physics

25 *Unusual Ground States in Li<sub>0.9</sub>Mo<sub>6</sub>O<sub>17</sub>*

**Sarah Montanti**, Rowan University, Glassboro, NJ Chemistry & Physics- Senior  
Prof. Rongying Jin, University of South Carolina, Columbia, SC Physics and Astronomy  
Mr. Daniel Duong, University of South Carolina, Columbia, SC Physics

*26 Transition Metal Quantum Defects in Wide-Bandgap Semiconductors*

**Bee Ball**, University of South Carolina, Columbia, SC Physics & Electrical Engineering- Senior  
Dr. Sai Mu, University of South Carolina, Columbia, SC Department of Physics and Astronomy  
Dr. Zhi-Hao Wang, University of South Carolina, Columbia, SC Department of Physics and Astronomy

*27 Invisible Decays of Muonium*

**Nicholas Bagby**, The Ohio State University, Columbus, OH Physics- Senior  
Dr. Alexey Petrov, University of South Carolina, Columbia, SC Department of Physics and Astronomy  
Dr. Girish Kumar, University of South Carolina, Columbia, SC Department of Physics and Astronomy  
Mr. Ehsan Fasihi Moghaddam, University of South Carolina, Columbia, SC Department of Physics and Astronomy

*28 Probing Lepton Flavor Violation in Electron-Positron Collisions*

**Keith Scarbor**, Berry College, Rome, GA Physics- Senior  
Dr. Alexey Petrov, University of South Carolina, Columbia, SC Physics

*29 Determining Particle Momenta through Time-of-Flight Measurements for the MUSE Experiment*

**Evan Zimmerman**, Colgate University, Hamilton, NY Physics- Junior  
Prof. Steffen Strauch, University of South Carolina, Columbia, SC Department of Physics and Astronomy  
Mr. Cameron Walker, University of South Carolina, Columbia, SC Department of Physics and Astronomy

*30 Investigating Structural and Magnetic Contributions to SHG in BaMnSb<sub>2</sub>*

**Jonathan Stowers**, The College of Wooster, Wooster, OH Physics- Junior  
Dr. Yanwen Wu, University of South Carolina, Columbia, SC Department of Physics and Astronomy

**REU: Linguistics**

***Partner-Specific Alignment at the Lexical and Syntactic Levels in Interactive Dialogue***

*31 Analyzing Leader-Follower Dynamics in Task-Oriented Dialogue through Linguistic Alignment*

**Marguerite Wilson**, University of South Carolina, Columbia, SC Neuroscience- Senior  
Dr. Amit Almor, University of South Carolina, Columbia, SC Psychology  
Ms. Sarah Wilson, University of South Carolina, Columbia, SC Linguistics

*32 Relating Lexical Alignment and Task Completion Efficiency for Dyads in a Collaborative Task-Oriented Dialogue*

**Gwendolyn Simons**, University of South Carolina, Columbia, SC Statistics & Psychology Senior  
Dr. Amit Almor, University of South Carolina, Columbia, SC Psychology  
Ms. Sarah Wilson, University of South Carolina, Columbia, SC Psychology

**STEM and Health Sciences**

*33 A Longitudinal Study of the Auditory Startle Reflex in Autistic Children*

**Karina Sheth**, University of South Carolina, Columbia, SC Neuroscience & Spanish- Senior  
Dr. Abigail Hogan, University of South Carolina, Columbia, SC ASPH

*34 Mathematical Modeling of Neuroendocrine-Driven Inflammation*

**Josh Prioleau**, University of South Carolina, Columbia, SC Physics- Junior  
Dr. Mitchel Colebank, University of South Carolina, Columbia, SC Department of Mathematics



35 *The Right Whale: Tracking Media Coverage of a Critically Endangered Species for Lasting Policy Change*

**Hunter Ohmann**, University of South Carolina, Columbia, SC Environmental Science- Senior

Dr. Erin Meyer-Gutbrod, University of South Carolina, Columbia, SC School of Earth, Ocean & Environment

Mrs. Amadi Afua Sefa-Twerefour, University of South Carolina, Columbia, SC School of Earth, Ocean & Environment

36 *Evaluating and Designing Metasurfaces for Exciting Skyrmions in Two-dimensional Materials*

**Sophia Ellis**, University of Richmond, Richmond, VA Physics- Junior

Dr. Mariama Rebello de Sousa Dias, University of Richmond, Richmond, VA Department of Physics

Dr. Yanwen Wu, University of South Carolina, Columbia, SC Department of Physics and Astronomy

Mr. Yuxuan Hu, University of Richmond, Richmond, VA Department of Physics

37 *Listening In: Undergraduate Reflections on Clinical Supervision Practices Through Transcript Review*

**Ashanti Adams**, University of South Carolina, Columbia, SC Psychology- Senior

Dr. Kimberly Becker, University of South Carolina, Columbia, SC Psychology

38 *Revealing the Magnetic Fields Towards the Central Supermassive Black Hole of the Circinus Galaxy*

**Bennett Bass**, University of South Carolina, Columbia, SC Physics- Junior

Dr. Enrique Lopez Rodriguez, University of South Carolina, Columbia, SC Physics and Astronomy

39 *Early Predictors of Infant-Parent Coordinated Attention and Word Learning in Preterm and Full-term Infants*

**Hunarmmeet Gill**, University of South Carolina, Columbia, SC Neuroscience- Sophomore

**Aarav Patel**, University of South Carolina, Columbia, SC Neuroscience Sophomore

Dr. Xiaoxue Fu, University of South Carolina, Columbia, SC Department of Psychology

40 *Evaluating Zuranolone as a Pharmacological Advancement in the Treatment of Postpartum Depression A Review of Long-Term Therapeutic Impact*

**Boomika Mahesh**, University of South Carolina, Columbia, SC Biology- Junior

Dr. Richard Osbaldiston, University of South Carolina Beaufort, Beaufort Psychology

41 *Reflections on Menstrual Symptom Severity Interviews After a Plant-Based Nutrition Intervention*

**Mallory Gedeon**, University of South Carolina, Columbia, SC Biochemistry & Molecular Biology -Senior

Dr. John Bernhart, University of South Carolina, Columbia, SC Health Promotion, Education, and Behavior

## ***REU Site: Analytic Combinatorics, Modular Forms, and Number Theory.***

42 *Exceptional Congruences for Eta-Quotient Newforms*

**Sean Jin**, University of Illinois, Urbana Champaign, IL Math- Sophomore

**Eddie O'Sullivan**, Colby College, Waterville, MA Math- Senior

**Henry Stone**, University of Michigan, Ann Arbor, MI Honors Math- Junior

Dr. Matthew Boylan, University of South Carolina, Columbia, SC Mathematics

Ms. Swati, University of South Carolina, Columbia, SC Mathematics

43 *Limiting Distributions of Various Types of Integer Partitions*

**Alex Cao**, University of California, Santa Barbara, CA Mathematics- Freshman

**Jack Frew**, The Ohio State University, Columbus, OH Math and Physics- Senior

**John Lehman**, Durham University, Durham, UK Mathematics- Senior

Dr. Wei-Lun Tsai, University of South Carolina, Columbia, SC Mathematics

Mr. Tapas Bhowmik, University of South Carolina, Columbia, SC Mathematics