

PIERCE MASTERS JACKSON

EDUCATION AUBURN UNIVERSITY – AUBURN, ALABAMA – CURRENTLY ENROLLED

Projected Graduation: May 2020

- Bachelor of Science in Physics (in progress)
- Completed 6 full semesters with a cumulative GPA of 3.65/4.00

VESTAVIA HILLS HIGH SCHOOL – VESTAVIA HILLS, ALABAMA

- Class of 2016; Graduated with Honors

RESEARCH EXPERIENCE

UNDERGRADUATE PHYSICS RESEARCH – AUBURN UNIVERSITY

January 2019 – current: Theoretical Research in Laboratory Astrophysics under the direction of Auburn Physics Professor Dr. Stuart Loch. I have been determining the impact that experimentally measured dielectronic recombination (DR) rates have on typical astrophysical photoionized plasmas such as planetary nebulae, compared to theoretical DR rates. My results are generated using the astrophysical modeling code CLOUDY.

- **First Author Paper:** *Impact of Experimentally Measured Dielectronic Recombination Rate Coefficients on Photoionized Plasmas*, Jackson PM, Loch SD, Fogle M, Guzman F, (In preparation.) To be submitted to the *Astrophysical Journal* for review and publication in Q2 2020 or earlier
- **Poster Presentation** based on above research:
 - Presented by Dr. Mike Fogle at *2019 Stored Particle Atomic Physics Research Collaboration (SPARC)* meeting in Germany
 - I presented at the *2019 Southeastern Section of the American Physical Society (SESAPS)* meeting in North Carolina

Spring 2018- January 2019: I worked with graduate student Ahmad Nemer to prove the existence of an atomic process referred to as “Rydberg Enhanced Recombination” (RER) that changes theoretical elemental and ion abundances in space environments such as planetary nebulae.

- **Poster Presentation** at *233rd American Astronomical Society (AAS)* meeting: *The first evidence of enhanced recombination in planetary nebulae and the implications on photo-ionized plasmas and spectroscopy*, Nemer A, Sterling N, Raymond J, Dupree A, Garcias-Rojas A, Pindzola J, Jackson PM, Rizzuto S, Wang Q, Balance CP, Loch SD.

AUBURN UNIVERSITY SMALL SATELLITE PROGRAM (AUSSP)

June 2019 - Current

- Software developer for AUSSP’s TRYAD satellite project. TRYAD is a pair of 6u small-sats that aim to detect terrestrial gamma ray bursts in low Earth orbit. I developed software drivers in Python for many of the satellite’s sensors and devices including: magnetometers, rate gyros, analog-to-digital converters, and multiplexers, such that they could communicate over I2C with the main computer (BeagleBone Black)

- Currently the Software/Command and Data Handling System Team Lead for TRYAD. I lead a team of ~10 students in multiple different CDHS (Command and Data Handling System) projects for TRYAD and collaborate with many all other subsystems (Attitude Determination and Control, Electrical Power System, Mechanical, Thermal)

SUMMER REU – AUBURN UNIVERSITY

June - August 2018

- Under the supervision of Dr. Stuart Loch, I modeled radio recombination lines of high-n (Rydberg) states and investigated how Rydberg Enhanced Recombination would affect a produced spectrum using Python. Later in summer, I began to investigate more accurate ways of calculating Einstein-A coefficients using Python and Fortran codes that I developed. This allows for more accurate modeling of affected spectra. At the end of the summer program, I gave an oral presentation of my findings.

NASA INTERNSHIP/VOLUNTEER – MARSHALL SPACE FLIGHT CENTER

June-July 2016

- I was mentored by heliophysicist Ms. Mitzi Adams and analyzed data from the Solar Dynamics Observatory to determine the causes of jets within coronal holes on the disk of the Sun. I presented my findings at the end of my 4-week stay.

NASA SHADOWING VISITS

February 2015 & October 2015

- I visited NASA's Marshall Space Flight Center in Huntsville, Alabama during the spring of my junior year and the fall of my senior year of high school. I shadowed NASA employees during both of these visits to get a better understanding of their jobs and what they do.

TEACHING EXPERIENCE ENGINEERING PHYSICS I LAB TEACHING ASSISTANT

- Fall 2019
- I taught an Engineering Physics I lab at Auburn under Dr. Daniel Merrill. I taught recitation, managed my lab of 24 students, graded their lab work/quizzes, and helped grade in-class tests.

Spring 2020

- I currently teach two Engineering Physics I labs at Auburn under Dr. Joseph Perez.

TECHNICAL SKILLS PROGRAMMING & CODING

- **Python:** 3+ years of experience; introduced to Python in summer 2016. Used to analyze CLOUDY simulation data in my current research. Used often in my undergraduate courses such as Astrophysics and Computational Physics. Used extensively for AUSSP TRYAD mission
- **LaTeX:** Peer reviewed paper written in Overleaf (Online LaTeX editor) as well as class papers and projects
- **Fortran:** 1 year of experience; used in my early undergraduate research/2018 REU; used in Computational Physics course
- **Mathematica, Linux, IDL**

HONORS Society of Collegiate Leadership and Achievement

Fall 2019

Sigma Alpha Pi – National Society for Leadership and Success

Fall 2019

News Article Written about me*COSAM Senior to Inspire Young Students to Study Physics*, written by Carla Nelson, Auburn University

Fall 2019

Sigma Pi Sigma – National Physics Honor Society

Spring 2019

Outstanding Junior in Physics – Auburn University

Spring 2019

Dean's List – Auburn University

Fall 2018, Spring 2019

Phi Eta Sigma Honor Society – National Collegiate Freshman Honor Society

2017

Eagle Scout

2014

ACTIVITIES President of Auburn's Society of Physics Students**AND** Elected President by Peers: 2019 – 2020**LEADERSHIP Vice President of Auburn's Astronomical Society**

Helped found the Auburn University Astronomical Society in Spring 2020 and assumed role of Vice President: Spring 2020

Vice President of Auburn's Society of Physics Students

Elected VP by Peers: 2018 – 2019

Social Chair of Auburn's Society of Physics Students

Elected Social Chair by Peers: 2017 – 2018

Auburn Rugby Club – Player

2016-2017

SERVICE MEDICAL MISSION TO SAN ANDREAS, GUATEMALA

2013-2015, 2017

- Volunteer, Liberty Park Baptist Church

President's Volunteer Service Award (Bronze)

2015

EMPLOYMENT LIFETIME FITNESS VESTAVIA HILLS TEAM MEMBER

June – August 2017