MAXWELL PIPER

maxwell.z.piper@gmail.com
(319) 621-8929

EDUCATION

Reed College *Aug 2018 - May 2022*
Physics - BA

Physics Courses:

Solid State Physics (audit), Introduction to General Relativity, Quantum Mechanics I&II, Quantum Optics and Quantum Information, Thermal Physics, Topics of Astrophysical Interest, Advanced Laboratory I&II, Classical Mechanics, Electrodynamics I&II, Modern Physics, Oscillations and Waves, General Physics I&II

Mathematics Courses:

Vector Calculus, Linear Algebra, Introduction to Analysis, Calculus, Statistics (AP)

Liberal Arts Courses:

Anthropology of Science, Introduction to Ethics, Logic, Introduction to Anthropology, Humanities 110

Other Courses:

Computer Science I

Iowa City High School *Aug 2014 - May 2018*
Diploma
GPA: 3.98, National Honors Society

Advanced Placement Courses (No Reed Course Credit):

World History, English Language, Chemistry, Physics, Computer Science

RESEARCH EXPERIENCE

Senior Thesis *August 2021 - May 2022*
Reed College, Portland, OR *2 Semesters*

For my year long senior thesis, I investigated the characteristics of Counter-Rotating Disk galaxies using the 16th and 17th MaNGA Sloan Digital Sky Survey. Thesis advisor: Dr. Alison Crocker, Reed College.

Astrophysics Research Internship *May 2021 - August 2021*
Reed College, Portland, OR *10 Weeks*

I spent 10 weeks creating aperture corrections for stellar velocity dispersion measurements for late-type galaxies using the 15th data release of the MaNGA Sloan Digital Sky Survey. Project supervisor: Dr. Alison Crocker, Reed College.

WORK EXPERIENCE

Physics Teaching Assistant *August 2021 - December 2021*
Reed College, Portland, OR

I was a Teaching Assistant for PHYS164 - Stars and Stellar Systems. The course covered optics and telescope mechanics, as well as the kinematics and evolution of stellar systems. The course also had a lab component where students were taught how to use, collect, and analyze imaging data from Reed's 12" Meade LX200 ACF telescope.

Physics Course Grader *August 2020 - May 2021*
Reed College, Portland, OR

I was a grader for Reed's second year physics courses (Oscillations & Waves and Modern Physics).

Customer Service Assosciate *May 2019 - August 2019*
Lowe's, Coralville, IA

I was a customer service associate in outdoor lawn and garden. I helped customers find merchandise and made recommendations on which products they should purchase.

Telescope Operator *August 2018 - Present*
Reed College, Portland, OR

I am a trained operator of Reed's 12" Meade LX200 ACF Telescope and host observation nights open to the public.

Gymnastics Coach *May 2018 - August 2018*
Eyas Gymnastics, Iowa City, IA

I was in charge of coaching and organizing a Cross-Training focused Gymnastics class.

LAB EXPERIENCE

Computers and Coding *August 2018 - May 2022*

Most of my experience has been using Python and *Mathematica* for data analysis and data visualization. I have used Arduino and LabVIEW for interfacing with logic circuits and other lab experiments. I have also used JavaScript and Python for personal projects.

Quantum Optics and Quantum Information *August 2021 - December 2021*
Senior Year *1 Semester*

This course applied quantum mechanics to optical systems with small numbers of photons. It then moved into quantum information science, with an emphasis on how quantum systems differ from their classical counterparts. Laboratory experiments included single-photon interference and tests of local realism using spontaneous parametric down-conversion.

Advanced Physics Laboratory I&II *August 2020 - May 2021*
Junior Year *2 Semesters*

In the fall, labs used operational amplifiers, filters, oscillators, logic circuits, and computer interfacing and analysis using a LabVIEW system. In the spring, labs were guided and independent experimental investigations of physical phenomena using research-style measurement techniques. These provided a basis for understanding and designing laboratory systems used in contemporary experimental physics.

Oscillations & Waves and Modern Physics *August 2019 - May 2020*
Sophomore Year *2 Semesters*

Introduction to capacitors, inductors, resistors, transistors, OP-AMPs, and RLC circuits. In the spring, labs consisted of using *Mathematica* to build numerical techniques of integration, error propagation, ODE solving, root finding, and solving eigenvalue problems.

General Physics I&II *August 2018 - May 2019*
Freshman Year *2 Semesters*

Introduction to the classical mechanics of particles and systems. Labs introduced kinematics, laws of motion, conservation principles, rotational dynamics, oscillators, electricity and magnetism, and optics.

PRESENTATIONS

Reed College Poster Fair *August 2021*
Reed College
"Stellar Velocity Dispersion Corrections for Late-Type Galaxies": Poster Presentation

30th Annual Murdock College Science Research Conference *November 2021*
Vancouver, WA
"Stellar Velocity Dispersion Corrections for Late-Type Galaxies": Poster Presentation

239th American Astronomical Society Conference (cancelled due to COVID) *January 2022*
Salt Lake City, UT
"Stellar Velocity Dispersion Corrections for Late-Type Galaxies": Poster Presentation

EXTRACURRICULAR ACTIVITIES

Reed College Cycling Club *August 2021 - Present*
Founder

I founded the Reed College Cycling Club. The primary goal of the club is to connect Reed students that enjoy riding bikes with each other, and to foster an environment where anyone is able to explore the Portland, OR, area on a bike.

Amateur Bike Racer *May 2021 - Present*
Road / Cyclocross
OBRA License #: 21269

AstroBites Discussion Group *August 2018 - Present*
Member

AstroBites is an astronomy and astrophysics discussion group hosted by Dr. Alison Crocker. Each week a student gives a presentation summarizing a recent article published on the AstroBites website. The goal is to practice both presenting and critically reading scientific material, and to stay up-to-date with the literature.

AWARDS

2021 Murdock Poster Presentation Award for Physics and Engineering *November 2021*
M.J. Murdock Charitable Trust

This award recognizes students for their hard work in executing research and effort in preparing and presenting the results of their research in a poster format. Selection criteria is based on communication, knowledge and careful analysis of the material, creativity of the project, organization and clarity of the presentation, and poise in answering questions from the audience.

Level 10 Academic All-American *2015, 2016, 2017, 2018*
USA Gymnastics

REFERENCES

Prof. Alison Crocker, Reed College Associate Professor of Physics; my Thesis Advisor
Contact: crockera@reed.edu – (503) 517-5328

Prof. Mark Beck, Reed College Professor of Physics
Contact: beckm@reed.edu – (503) 517-5031

Prof. Joel Franklin, Reed College Professor of Physics; Department Chair
Contact: jfrankli@reed.edu – (503) 777-7249