# Alexandria Holthaus

*Curriculum Vitae*

(907)306-0626
alexandriaholthaus@gmail.com
www.linkedin.com/in/alexandria-holthaus/

## Education

2020 - 2024 **Masters of Science in Physics**, *University of Hawaii at Manoa, Honolulu, Hawaii, USA*.
Thesis Project: Calibration of Neutron Monitor Yield Functions Using AMS Data.

2017 - 2020 **Bachelor of Science in Astrophysics**, *University of Hawaii at Manoa, Honolulu, Hawaii, USA, Minor: Mathematics*.

2015 - 2017 **Undergraduate**, *University of Alaska Anchorage, Anchorage, Alaska, USA, Major: Mathematics (no degree earned)*.

## Certifications

May 2024 **Apache Spark (TM) SQL for Data Analysts**, *databricks*.

## Research Projects

Jan. 2023 - Present **Calibration of Neutron Monitor Yield Functions Using AMS Data**

Analysis Language: Python. Analysis of neutron monitor yield functions using large data sets from the Alpha Magnetic Spectrometer (AMS) on the International Space Station and combining the data from 21 different neutron monitors. In this analysis I used the python pandas library to manage and clean the data sets and preformed calculations using scipy and numpy libraries. Finally I created visualizations using matplotlib and ploty. I presented these results at the 2023 Solar Heliospheric and INterplanetary Environment (SHINE) workshop. Prof. Veronica Bindi, Department of Physics and Astronomy, University of Hawaii at Manoa

Jan. 2022 - Dec. 2022 **Effects of Rotation in the Stellar Evolution of High Mass Stars on the Black Hole Mass Gap**

Analysis Language: Python & Fortran. Using Modules for Experiments Stellar Astrophysics (MESA), large scale simulations written in Fortran, to simulate the evolution of high mass stars and analyzes the effects of rotation on the mass of the remnant black hole. Then I used python to create visualizations of the simulation results. Prof. Jeremy Sakstein, Department of Physics and Astronomy, University of Hawaii at Manoa

Aug. 2019 -May 2020 **Implications of the GEneric Objects of Dark Energy Hypothesis on the Abundance of Supermassive Black Holes**

Analysis Language: Python. Using GEODE Hypotheses, I wrote a simple Monte Carlo simulation to calculate abundances of black holes within the model and compare this with observation using, python libraries, as a means to test said model. Prof. Duncan Farrah and Dr. Kevin Croker, Department of Physics and Astronomy, University of Hawaii at Manoa

Jan. 2019 - May 2019 **Statistical Analysis of Theoretical Models for Evolution of the Tadpole Galaxy**

Analysis Language: Python. N-body simulation of galaxy collision refinement using observed data. Prof. Joshua Barnes, Institute for Astronomy, University of Hawaii at Manoa

Oct. 2017 - Dec. 2018 **Cosmicflows-4 Research Group, Galaxy Inclination Zoo Collaborative Tool**

Finding galaxy inclinations using the Galaxy Inclination Zoo tool and doing photometry for the Comicflows project. Prof. Brent Tully and Dr. Ehsan Kourkchi, Institute for Astronomy, University of Hawaii at Manoa

May 2016 - May 2017 **Galaxy Simulation Outputs Analyzed as Observed Data**

Analysis Language: IDL (Interactive Data Language). N-body galaxy simulation output analyzed as if it was observed data to compared with actual galaxy observations in order to help classification of galaxies. Prof. Erin Hicks, Department of Physics and Astronomy, University of Alaska Anchorage

## Teaching Experience

Jan. 2021 - Dec. 2022 **Physics Recitation Teaching Assistant**

Taught PHYS 272R General Physics II Recitation. Was in charge of running a problem solving session and grading. Supervisor: Prof. Eric Szarmes, Department of Physics and Astronomy, University of Hawaii at Manoa

Aug. 2020 - Dec. 2022 **Physics Lab Teaching Assistant**

Taught PHYS 272L/152L, General/College Physics II Laboratory. Was in charge of lecturing, running labs, and grading lab reports. Supervisor: Prof. Philip von Doetinchem, Department of Physics and Astronomy, University of Hawaii at Manoa

Mar. 2019 - May 2020 **Physics Tutor**

Tutored General Physics 1, 2 and 3, both calculus and algebra based. Supervisor: Michael Nassir, Learning Emporium Tutoring Center, University of Hawaii at Manoa

May 2019 - Aug. 2019 **Grader and Recitation Host**

Graded exams, made recitation worksheets, hosted recitation and review sessions for General Physics 1. Supervisor: Prof. Pui Lam, Department of Physics and Astronomy, University of Hawaii at Manoa

## Clubs

2019 - 2020 **Officer of Society of Physics Students University of Hawaii at Manoa Chapter** Planing and organizing events, ran social media pages, documented events.

2016 - 2017 **Officer and Founding Member University of Alaska Anchorage Astronomy Club** Treasurer, ran finances, organized fund raising events, helped create club and write constitution.

## Technical Skills

Programming Python, IDL, SQL, BASH, Databricks

| | |
|---|---|
| Software | LATEX, MESA, MS Word, MS Excel, MS PowerPoint |

## Languages

| | |
|---|---|
| English | Native |
| French | Basic |