ZACHARY MARTIN

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SKILLS

Programming Languages	Python, C++, Bash
Software & Tools	Linux, Windows, Unix Shell, Github, LaTeX, Geant4, ROOT
Certifications	Data Science 2020 by 365 Careers

EDUCATION

The University of Chicago   September 2021 - present
Ph. D. in Physics (in progress)

University of Hawaii at Manoa   August 2016 - May 2020
B. S. in Physics + B. S. in Mathematics
Minor in Astrophysics   GPA: 3.93

EXPERIENCE

Tutor   January 2021 -
The Tutoring Center, Honolulu, HI

· Assisted K-12 students in one-on-one tutoring using The Tutoring Center's innovative Rotational Approach to Learning, aiming to strengthen students' current level material while improving their foundational skills in reading, writing, and mathematics effectively and efficiently.

  – Took responsibility for 90% of the higher level mathematics students, being the most mathematically skilled within the small staff of 5-6 tutors.
  – Performed written progress reports for students who completed 20 or 40 sessions, including writing recommendations for enrollment into specific private schools as requested by parents.

Research Lab Assistant   May 2019 - October 2020
UHM Department of Physics and Astronomy
Research Corporation of the University of Hawaii

· Physics simulations (via Python and C++)

  – Python developer for ANITA and PUEO experiments: ray tracing visualizations to track ANITA signals to reflection points on Antarctic surface, and Monte Carlo simulations to investigate performance of open-source daytime star trackers to determine in-flight attitude of PUEO payload.
  – Developed Geant4 (C++) particle interaction simulations to investigate performance of new Askaryan detector concept for FCC at CERN. Data analysis and visualization performed via ROOT.
  – Automated multi-threaded data acquisition of simulation results via Bash Script and server clusters.

· Instrumentation

  – Led full re-calibration and measurement campaign of ANITA payload radio-frequency antennas and impulse response channels. Included S-parameter measurements, impedance matching, and signal processing.
  – Analyzed TEM modes of regolith-loaded resonant waveguides via RF network analyzers to determine electromagnetic properties of the lunar regolith.

Physics and Math Tutor   Sept 2018 - October 2019 ∥ Jan 2020 - May 2020
UHM College of Natural Sciences Learning Emporium

· Assisted undergraduate students on physics or mathematics concepts and problems, with emphasis on gaining intuition to motivate their critical-thinking and problem-solving skills.

  – Increased retention rate through external promotions to students in physics and mathematics.
  – Lead tutor for transition into online tutoring due to COVID-19 pandemic, showcasing tutorials of new software such as Zoom and Piazza.

Physics Teaching Assistant   May 2017 - October 2017
UHM Department of Physics and Astronomy

· Assisted UHM Physics 170 course in introductory classical mechanics taught by Dr. Pui Lam.

  – Arranged office hours and recitations for review and emphasis of lecture material. Graded exams and weekly homeworks.

ACCOMPLISHMENTS

As president of the Society of Physics Students at the University of Hawaii at Manoa...

  – Earned the chapter's first SPS Outstanding Chapter Award since 1997, awarded by SPS National.
  – Delegated a team of club officers to lead society events. Successfully recruited new officers to assume seven out of eight open positions due to graduating officers.
  – Introduced a new Social Media Manager position and increased outreach efforts, doubling the average event turnout.
  – Coordinated the creation and execution of the first SPS Python Bootcamp learning workshops to address a lack of coding knowledge and experience within the university community.
  – Increased outreach and networking to professional experts in the fields of physics, astronomy and related careers, including CERN, the American Astronomical Society (AAS), and the data science company Booz Allen Hamilton.
  – Organized and updated all club resources via Google Drive applications (calendars, spreadsheet, and forms) to better manage event coordination, member tracking, media files, and documentation.

Member of Phi Beta Kappa, Alpha of Hawaii Chapter, University of Hawaii at Manoa, as of May 2020.