Jacob Ross Romeo

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Introduction

Graduate researcher in Physics & Astronomy with experience in experimental particle physics, astrophysics, and engineering physics. Currently pursuing a M.S. at the University of Hawai'i at Mānoa. Research includes particle detector development, analysis on non-radial pulsating A/F stars, optical instrumentation, and control systems.

Education

University of Hawai'i at Mānoa Fall 2024 – Present
M.S. in Physics & Astronomy, GPA: 3.0

Embry-Riddle Aeronautical University Fall 2020 – Spring 2024
B.S. in Astronomy & Astrophysics, GPA: 3.2
Minor: Computer Science & Applied Mathematics

Skills

Programming: Python, C++, Java, ROOT, SQL, LaTeX, HTML
Electronics: PCB Design (KiCad, Eagle), Circuit Development
Engineering: CAD (Fusion 360, Inventor)
Astronomy Tools: AstroImageJ, Period04, TopCat, R-Spec

Publications

- Romeo, J., Ballback, D., Fox, K., Drakunov, S. 2024. Proc. SPIE 13058. *"Integrated spacecraft autonomous attitude control testbed"*, SPIE:13058
- Romeo, J., Vikas, S., Gillam, S., Woodruff, H., 2023. ERAU Beyond. *"A 3D Printed Outreach Periscope for the Embry-Riddle Aeronautical University 1-meter Telescope"*

Research & Professional Experience

Institute for Astronomy, UH Mānoa – Research Assistant 2025 – Present

- Collaborating with Dr. Huber and Dr. Hey on expanding catalog of roAp stars.
- Applied LightKurve for dataset building; publication expected in 2026.
- Progress can be seen on GitHub under roAp directory: Pulsation Classification

Varner Lab, UH Mānoa – Research Assistant 2024 – Present

- Belle II/SuperKEKB collaboration on TOP detector upgrades and diagnostics.
- Preparing thesis on AI based feature extraction and TOP upgrades with Dr. Yoshihara.

Lawrence Berkeley Nat. Lab / Livermore Nat. Lab – Research Intern Summer 2025

- Investigated quantum bit synthesis using vacancy centers with petawatt NIR laser.
- Implanted ions into diamond/silicon hosts; confirmed via microscopy and spectra analysis.
- Co-author on upcoming publication.

ROAST Project – Embry-Riddle Univ. / Research Assistant 2021 – 2024

- Conducted pulsation analysis of roAp star candidates with Dr. Gillam.
- Imaged using the Southeastern Association for Research in Astronomy observatories and Embry Riddle's 1-meter observatory.

- Developed Python classifier using Gaia/StarHorse databases.
- Results shared on GitHub: ROAST.

Senior Astrophysics Project - Embry-Riddle Univ. Spring 2024

- Used Embry Riddle's 1-meter observatory to image a pulsating White Dwarf star.
- Results agreed with known pulsation frequencies and amplitudes of GD 358.
- Results shared on GitHub: EP 425 Project

Engineering Physics Propulsion Lab, ERAU – Lead Research Intern & PI 2021 – 2024

- Led multiple projects in optical physics, control theory, and electronics.
- ALMA Project: Simulated near-IR laser mining of ice in space (ALMA).
- Outreach Periscope: Designed 3D-printed telescope periscope for outreach (Periscope).
- EasyControls: Developed 3D-printed controls testbed for real-time attitude control tests; published in 2024 SPIE defense conference catalog (Paper, EasyControls).

ERFSEDS Rocket Lab, Propulsion Lab – Hardware Developer 2020 – 2023

- Designed flight computer prototype and PCBs for EasyDrift autonomous vehicle project.

Teaching Experience

Teaching Assistant – UH Mānoa (Physics & Astronomy) 2024 – Present

- Teaching introductory and advanced physics labs for undergraduates.
- Supporting students with experimental methods, data analysis, and technical writing.

Grants & Awards

Full Scholarship – UH Mānoa (2024–Present)
Golden Eagle Scholarship – ERAU (2020–2024)
ERAU SPARK, IGNITE, and SURF research grants (2020–2024)
