Jay Baptista (he/him)

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Github: github.com/jaybaptista

Education

- **Yale University** — New Haven, CT
  Bachelor of Science - Astrophysics; GPA: 3.94 (as of Sep. 2022) — *June 2019 - May 2023*

Research Experience

- **Undergraduate Research Fellow** — Santa Cruz, CA
  Prochaska Group — *May 2022 - Aug 2022*
  Explored fast radio bursts as an independent measure of cosmic feedback by using synthetic FRB surveys. We find that implementing galactic feedback as a free parameter causes loss of constraining power on the cosmological constant.
- **Undergraduate Research Fellow** — Mānoa, HI
  Sanderson Group — *May 2021 - Jul 2021*
  Comprehensively analyzed the evolution of dark matter halo symmetry axes in FIRE-2 galaxies over time and as a function of satellite galaxy interaction. Research is supervised and directed in collaboration with the Galaxy Dynamics lab at the University of Pennsylvania/Flatiron Institute's Center for Computational Astrophysics under Professor Robyn Sanderson.
- **Research Assistant** — New Haven, CT
  Geha Group — *August 2020 - January 2021*
  Developed a fork of the Manual and Automatic Redshifting Software to be compatible with dwarf spectra collected from the Deep Extragalactic Multi-Object Spectrograph on Keck II.
- **Undergraduate Research Fellow** — New Haven, CT
  Geha Group — *May 2020 - July 2020*
  Evaluated the efficacy of stellar selection methods for determining star membership probabilities of ultra-faint Milky Way satellite galaxies using data from the Keck DEIMOS instrument. We find that color-magnitude and stellar position probabilities are insufficient in determining dispersion-based bound masses of ultra-faint galaxies.

Teaching Experience

- **Peer Tutor** — New Haven, CT
  ASTR 310 — *February 2021 - May 2021*
  Taught a foundational understanding of galactic dynamics, chemistry, and substructure in one-on-one tutoring sessions. Additionally, I taught and reinforced theoretical concepts on black holes and active galactic nuclei.
- **Undergraduate Learning Assistant** — New Haven, CT
  ASTR 160 — *March 2022 - May 2022*
  Graded quizzes and provided feedback to students to assist in their understanding of introductory astronomy topics (i.e., orbital mechanics, rocket science, exoplanets, and black hole science). I also collaborated with instructors to develop a curriculum that helps build practical scientific intuitions for humanities and non-physical science majors.

Talks

- **American Astronomical Society 53rd Division on Dynamics Astronomy (April 2022)**: Orientations of Dark Matter Symmetry Axes in Latte Galaxies
- **University of Hawaii Mānoa (July 2021)**: Orientations of Dark Matter Symmetry Axes in Latte Galaxies
- **Yale University (July 2020)**: Determining Membership Probabilities of Ultra-faint Dwarf Galaxies

Publications

- ***Orientations of Dark Matter Halos in CDM and SIDM Latte Galaxies*** **(in prep)**: **Baptista, J.**; Sanderson, R.; Huber, D.; Wetzel, A; Sameie, O.; Chakrabarti, S.; Vargya, D.; Panithanpaisal, N.; Arora, A.; Cunningham, E.
- ***Constraining the Tilt of the Milky Way's Dark Matter Halo with the Sagittarius Stream*** **(2022)**: Panithanpaisal, N.; Sanderson, R.; Arora, A.; Cunningham, E.; **Baptista, J.** arXiv:2210.14983.

Skills Summary

- **Languages**: Python, C#, JavaScript, ADQL, Bash, Java

Observing Experience

- Keck I Telescope (1 night); PI: Daniel Huber
- Palomar Telescope (2 nights); PI: Marla Geha
- Keck II Telescope (3 nights); PI: X. Prochaska, Sunil Simha

Awards and Fellowships

- Yale Science Technology and Research Scholar Summer Fellow - May, 2020
- University of Hawaii Institute for Astronomy: REU Fellow - June 2021
- Yale Science Technology and Research Scholar II Fellow - August, 2021
- University of California Santa Cruz: Lamat REU Fellow - June, 2022