

# Jay Baptista (he/him)

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## 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.
- **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 (2022):*** Baptista, J.; Sanderson, R.; Huber, D.; Wetzel, A.; Sameie, O.; Chakrabarti, S.; Vargya, D.; Panithanpaisal, N.; Arora, A.; Cunningham, E. Submitted to ApJ.
- ***TOI-4010: A System of Three Large Short-Period Planets With a Massive Long-Period Companion (2022):*** Kunitomo, M.; Vanderburg, A.; Huang, C.; et al. incl. Baptista, J. Submitted to ApJ.
- ***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