

Joshua B. Hill

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Research Interests

- Cosmology
- Large Scale Structure
- Galaxy Formation
- Dark Matter
- Machine Learning
- Astrometry

Appointments and Research Experience

UROP Research Student • 2022 to 2023

- The University of Utah
- *A Catalog of Nearby Accelerating Star Candidates in Gaia DR3*
- Used machine learning methods to create a catalog of accelerating stars. Collaboration was vital for the completion of this project.

Research Student • Summer 2023

- The University of Utah
- *Galaxy-Halo Connection*
- Creating a model that predicts how Dark Matter Halos determine the half light radius of galaxies

Technical Skills

Coding languages and packages: Python, Astropy, Scikit learn, Maple, Latex

Honors and Awards

- Undergraduate Research Opportunity Program (UROP) Spring 2022 and Fall 2022
- Paul Gilbert Outstanding Undergraduate Research Award in Astronomy and Astrophysics

Research Presentations

- Marc L. Whiting; Joshua B. Hill; Benjamin Bromley; Scott Kenyon, 2023, *A Catalog of Nearby Accelerating Star Candidates in Gaia DR3*, Utah Conference on Undergraduate Research, contributed, talk

Relevant Courses

Physics 3730 (Computing in physics I): Statistics, Linux command line, Python, Latex, Maple

Physics 4410 (Classical Physics I): Lagrangian and Hamiltonian Mechanics, Central force motion, Rigid Body Motion

Physics 4420 (Classical Physics II): Electrostatics, Magnetostatics, Potentials, Electrodynamics, Special Relativity

Physics 4080 (Intro to Cosmology): Friedmann Equation, Model Universes, Dark Matter, Cosmic Microwave Background, Inflation, Structure Formation

Physics 4090 (Stellar Astrophysics): Stellar Structure, Stellar populations, Stellar evolution

Physics 5210 (Intro To Gravitation): Special Relativity, Geodesics, Curvature, Einstein Equation

**Teaching
Experience**

Learning Assistant, University of Utah • January 2023 to May 2023

- Physics 3010 Intermediate Mechanics, Facilitate small group discussions, hold office hours.

Teaching workshops

Center for Science and Mathematics Education (CSME) symposium, contributed, poster

Publications

- Marc L. Whiting; **Joshua B. Hill** ; Benjamin Bromley; Scott Kenyon, 2023, *A Catalog of Nearby Accelerating Star Candidates in Gaia DR3*, AJ accepted, 14 pages, 6 figures, 3 tables. Catalog available with publication; doi:10.3847/1538-3881/acc526