

Gavin Wang

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Education

Johns Hopkins University, Baltimore, MD, USA

August 2022 – May 2026 (expected)

Bachelor of Science in Physics, GPA 3.90 / 4.00

Research Experience

Young Gas Giant Follow-up, Johns Hopkins University

September 2024 – present

Mentors: William Balmer, Dr. Laurent Pueyo

- Radial velocity monitoring of young system of two transiting gas giants

High-Resolution Ground-Based Spectroscopy, California Institute of Technology

June 2024 – present

Mentors: Jerry Xuan, Prof. Dimitri Mawet

- Analyzing high-resolution spectra from the Keck Planet Imager and Characterizer of a low mass L dwarf
- Using radiative transfer models to measure atmospheric abundances and isotopic ratios
- First-author publication in preparation

JWST Instrumental Research, Space Telescope Science Institute

October 2023 – present

Mentor: Dr. Néstor Espinoza

- Investigating methods to reduce 1/f noise for JWST's Near-Infrared Spectrograph with Bayesian statistics
- Developed code for [whitening 1/f noise](#)

Research Intern, Johns Hopkins University

April 2023 – present

Mentors: William Balmer, Prof. David Sing

- Using WIYN/NEID radial velocity data to precisely measure the mass of an extremely low-density Saturn
- First-author publication in preparation

TESS Transit Depth Variability, Space Telescope Science Institute

January 2022 – December 2023

Mentor: Dr. Néstor Espinoza

- Searched for depth variability among a sample of 330 exoplanets using Transiting Exoplanet Survey Satellite (TESS) data
- [First-author paper](#) published in the *Astronomical Journal*

Independent Researcher

March 2021 – August 2021

- Developed data pipeline for identifying false positives among exoplanet candidates
- Analyzed 100k+ TESS full-frame images; reclassified 10 exoplanet candidates as eclipsing binaries

Junior Member, TESS Follow-up Observing Program

July 2020 – January 2022

Mentor: Dr. Karen Collins (Harvard-Smithsonian Center for Astrophysics)

- Helped identify 10 extrasolar planets from 100+ datasets collected by the Las Cumbres Observatory
- 24 co-author publications (2021 – 2024)

Select Coursework

Physics: Classical Mechanics I/II, Special Relativity & Waves, Quantum Mechanics I/II, Statistical Physics

Math: Honors Algebra I, Probability

Astronomy: Physical Cosmology, Observational Astronomy, Radiative Astrophysics

Honors & Awards

Maryland Sellinger Scholarship, JHU December 2024
Donor-funded scholarship recipient

ΣΠΣ, JHU Chapter May 2024
Inducted into honor society in recognition of outstanding scholarship in physics and astronomy

Summer Undergraduate Research Fellowship, Caltech April 2024
\$7,740 award for conducting a ten-week summer research project

Dean's List, JHU Spring 2023 – present

Provost's Undergraduate Research Award, JHU October 2022
\$3,000 award; 25 selected research proposals out of 137

Posters/Talks

TESS Science Conference III (poster) August 2024
"A Blind Search for Transit Depth Variability with TESS"

JHU Undergraduate Research Showcase (poster) April 2024
"A Blind Search for Transit Depth Variability with TESS"

TESS Science Talks @ MIT (invited talk) March 2024
"Searching for Transit Depth Variability with TESS"

JHU DREAMS Conference (poster) October 2023
"A Blind Search for Transit Depth Variability with TESS"

54th Annual Meeting of the AAS Division for Planetary Sciences (poster) October 2022
"Constraints on Transit Depth Variations of Known Exoplanets with TESS"

53rd Annual Meeting of the AAS Division for Planetary Sciences (poster) October 2021
"Developing a Tool to Automate the Search for NEBs Among TOIs"

TESS Science Conference II (poster) August 2021
"Analyzing FFIs to Identify False Positives within TESS Candidates"

Society for Astronomical Sciences 2021 Symposium on Telescope Science (poster) June 2021
"Eclipsing Binaries Identified Through the TESS Follow-up Observing Program"

Teaching

Learning Den Tutor, JHU Fall 2023

- Drop-in tutoring, help room, and personalized tutoring for General Physics I

Undergraduate Learning Assistant, JHU Spring 2023 – Fall 2023

- Assisted for General Physics I (AS.171.101 and AS.171.107) weekly discussion sections
- Held weekly 2-hour office hours

Observing Time

1. “Unlocking the periods and masses of two young long-period planets,” **Principal Investigator** 2025A
23 hours, Miniature Exoplanet Radial Velocity Array-Australis
2. “Synergistic Cool Star Monitoring,” **Co-Investigator** 2024Q3
14.5 hours, Apache Point Observatory ARC 3.5-meter Telescope

Service & Outreach

Hopkins Insider, JHU

May 2023

- Wrote [blog post](#) on my exoplanet research for prospective undergraduates

Refereed Publications

First-author publications:

1. **Wang**, Xuan, González Picos et al., *Chemical and isotopic homogeneity between a cloudy L dwarf and its early M host star*. In preparation.
2. **Wang**, Balmer, Pueyo et al., *A Revised Density Estimate for HAT-P-67b, the Largest Planet*. In preparation.
3. **Wang**, Espinoza, *A Blind Search for Transit Depth Variability with TESS*, The Astronomical Journal (2024), 167, 1.

Co-authored publications: see [Google Scholar](#) for full list; citations: **380**; h-index: **13**

1. Peterson, Benneke, Collins et al. (including **Wang**), *A temperate Earth-sized planet with tidal heating transiting an M6 star*, Nature (2023), 617, 701.
2. Persson, Georgieva, Gandolfi et al. (including **Wang**), *TOI-2196 b: Rare planet in the hot Neptune desert transiting a G-type star*, Astronomy & Astrophysics (2022), 666, A184.
3. Sha, Vanderburg, Huang et al. (including **Wang**), *TESS spots a mini-Neptune interior to a hot Saturn in the TOI-2000 system*, preprint, arXiv:2209.14396.
4. Caciapuoti, Inno, Covone et al. (including **Wang**), *TESS discovery of a super-Earth and two sub-Neptunes orbiting the bright, nearby, Sun-like star HD 22946*, preprint, arXiv:2209.09597.
5. Chontos, Murphy, MacDougall et al. (including **Wang**), *The TESS-Keck Survey: Science Goals and Target Selection*, The Astronomical Journal (2022), 163, 297.
6. Christian, Vanderburg, Becker et al. (including **Wang**), *A Possible Alignment Between the Orbits of Planetary Systems and their Visual Binary Companions*, The Astronomical Journal (2022), 163, 207.
7. Winters, Cloutier, Medina et al. (including **Wang**), *A Second Planet Transiting LTT 1445A and a Determination of the Masses of Both Worlds*, The Astronomical Journal (2022), 163, 168.
8. Silverstein, Schlieder, Barclay et al. (including **Wang**), *The LHS 1678 System: Two Earth-sized Transiting Planets and an Astrometric Companion Orbiting an M Dwarf Near the Convective Boundary at 20 pc*, The Astronomical Journal (2022), 163, 151.
9. Kaye, Vissapragada, Günther et al. (including **Wang**), *Transit timings variations in the three-planet system: TOI-270*, Monthly Notices of the Royal Astronomical Society (2022), 510, 5464.
10. Grunblatt, Saunders, Sun et al. (including **Wang**), *TESS Giants Transiting Giants. II. The Hottest Jupiters Orbiting Evolved Stars*, The Astronomical Journal (2022), 163, 120.
11. Giacomini, Dressing, Hedges et al. (including **Wang**), *Validation of 13 Hot and Potentially Terrestrial TESS Planets*, The Astronomical Journal (2022), 163, 99.
12. Scarsdale, Murphy, Batalha et al. (including **Wang**), *TESS-Keck Survey. V. Twin Sub-Neptunes Transiting the Nearby G Star HD 63935*, The Astronomical Journal (2021), 162, 215.

13. Gan, Bedell, Wang et al. (including **Wang**), *HD 183579b: a warm sub-Neptune transiting a solar twin detected by TESS*, Monthly Notices of the Royal Astronomical Society (2021), 507, 2220.
14. Otegi, Bouchy, Helled et al. (including **Wang**), *TESS and HARPS reveal two sub-Neptunes around TOI 1062*, Astronomy & Astrophysics (2021), 653, A105.
15. Dong, Huang, Dawson et al. (including **Wang**), *Warm Jupiters in TESS Full-frame Images: A Catalog and Observed Eccentricity Distribution for Year 1*, The Astrophysical Journal Supplement Series (2021), 255, 6.
16. Rodriguez, Quinn, Zhou et al. (including **Wang**), *TESS Delivers Five New Hot Giant Planets Orbiting Bright Stars from the Full Frame Images*, The Astronomical Journal (2021), 161, 194.

Skills

- Languages: English (native), Chinese (native)
- Computing: Python (5+ years), Linux, HPC
- Software: AstroImageJ, Anaconda, Matplotlib, NumPy, SciPy, dynesty, corner, emcee, Ray, astropy
- Astronomy: 80 hours experience operating 0.5m Morris W. Offit Telescope