

Daniel A. Yahalomi

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Education

Columbia University

New York, NY

M.A. in Astronomy and Astrophysics (2022)

2020 –

M.Phil. in Astronomy and Astrophysics (2023)

Ph.D. Candidate in Astronomy and Astrophysics (expected 2025)

– **Advisor:** David Kipping

– **Thesis:** Developing a Framework for Detecting Unseen Worlds

Massachusetts Institute of Technology

Cambridge, MA

B.S. in Physics with Concentration in Astronomy

2014-2018

Minors in Computer Science and Comparative Media Studies

– **Advisor:** Paul L. Schechter

– **Thesis:** Statistical Analyses of Gravitational Microlensing Probability Densities

Research Interests

I am most interested in projects at the intersection of exoplanet astronomy and data science in the data-limited regime. A common theme in my work has been fusing dynamical constraints from varied observational techniques in order to study extrasolar planets, particularly in multi-planet systems, with a focus on planetary dynamics and architectures.

Research Appointments

- **Dean's Fellowship**, Columbia GSAS: 2020 – .
- **Guest Researcher**, Flatiron Institute, Center for Computational Astronomy: 2020 – .
- **Astronomer**, Harvard CfA, with Dave Latham: 2018 – 2020.
- **Undergraduate Research Opportunities Program**, MIT with Paul Schechter: 2017 – 2018.
- **Summer Internship Program**, NASA JPL: 2016.
- **Undergraduate Research Opportunities Program**, MIT LIGO with Erotokritos Katsavounidis: 2015.

Honors & Awards

- **NASA ExoExplorer**: 2023-2024.
- **LSSTC DSFP Fellow**: 2023-2025.
- **AAS NOLP Fellow**: 2023-2025.
- **NSF GRFP Honorable Mention**: 2020.
- **Theo St. Francis (leadership) Award**, MIT Water Polo Team: 2017.
- **Academic All-American**, Association of Collegiate Water Polo Coaches: 2016, 2017.
- **High School Academic All-American**, USA Water Polo: 2012, 2013, 2014.

Publication Summary

Refereed Publications: 24 (3 first author; 2 second/third author; 1 many author; 18 TESS collaboration).

Non-Refereed Publications: 3 (1 under review; 1 white paper; 1 published in undergraduate research journal).

Citations: 679 total. h-index: 14. Updated March 2024.

Publications

First Author Publications

4. **Yahalomi, D. A.** et al. “Not So Fast Kepler-1513: A Perturbing Planetary Interloper in the Exomoon Corridor.” *Monthly Notices of the Royal Astronomical Society*, 527, 1, 620-639 (2024).
3. **Yahalomi, D. A.** et al. “Detecting Solar System Analogs through Joint Radial Velocity/Astrometric Surveys” *The Astronomical Journal*, 166, 6, id.258, (2023).
2. **Yahalomi, D. A.** et al. “The Mass of the White Dwarf Companion in the Self-Lensing Binary KOI-3278: Einstein vs. Newton.” *The Astrophysical Journal*, 880, 33 (2019).
1. **Yahalomi, D. A.**, Schechter, P. L, and Wambsganss, J. “A Quadruply Lensed SN Ia: Gaining a Time-Delay...Losing a Standard Candle.” *MIT Journal of Undergraduate Research*, Fall 2017 – arXiv:1711.07919.

Independent Significant Contribution

I contributed significant ideas, wrote/ran code, analyzed results, and/or wrote part of the manuscript.

6. Kipping, D. et al. **including Yahalomi D. A.** “A Reply to: Large Exomoons unlikely around Kepler-1625 b and Kepler-1708 b” under consideration by *Nature Astronomy as Matters Arising*, arXiv:2401.10333 (2024).
5. Grunblatt, S. et al. **including Yahalomi D. A.** “Roman CCS White Paper: Adding Fields Hosting Globular Clusters To The Galactic Bulge Time Domain Survey.” White Paper, arXiv:2306.10647 (2023).
4. Kipping, D. and **Yahalomi D. A.** “A search for transit timing variations within the exomoon corridor using Kepler data.” *Monthly Notices of the Royal Astronomical Society*, 518, 3 (2023).
3. Giacalone, S. et al. **including Yahalomi D. A.** “Validation of 13 Hot and Potentially Terrestrial TESS Planets.” *The Astronomical Journal*, 163, 2 (2022).
2. Christian, S. et al. **including Yahalomi D. A.** “A Possible Alignment Between the Orbits of Planetary Systems and their Visual Binary Companions.” *The Astronomical Journal*, 163, 5 (2022).
1. Palatnick S., Kipping D., and **Yahalomi D. A.** “Validation of HD 183579b Using Archival Radial Velocities: A Warm Neptune Orbiting a Bright Solar Analog.” *The Astrophysical Journal Letters*, 909, 1 (2021).

TESS Collaboration Papers

My authorship results from my contributions to mission planning, ground-based observing, and/or internal data analysis in the TESS collaboration. In all such instances, I provided substantive feedback on the manuscript.

17. Ikwut-Ukwa, M. et al. **including Yahalomi D. A.** “Two Massive Jupiters in Eccentric Orbits from the TESS Full Frame Images.” *The Astronomical Journal*, 163, 1 (2022).
16. Scarsdale, N. et al. **including Yahalomi D. A.** “TESS-Keck Survey. V. Twin Sub-Neptunes Transiting the Nearby G Star HD 63935.” *The Astronomical Journal*, 162, 5 (2021).
15. Teske, J. et al. **including Yahalomi D. A.** “The Magellan-TESS Survey. I. Survey Description and Midsurvey Results.” *The Astrophysical Journal Supplement Series*, 256, 2 (2021).
14. Hoyer, S. et al. **including Yahalomi D. A.** “TOI-220 b: a warm sub-Neptune discovered by TESS.” *Monthly Notices of the Royal Astronomical Society*, 505, 3 (2021).
13. Dong, J. et al. **including Yahalomi D. A.** “Warm Jupiters in TESS Full-Frame Images: A Catalog and Observed Eccentricity Distribution for Year 1.” *The Astrophysical Journal Supplement*, 255, 1 (2021).
12. Guerrero, N. M. et al. **including Yahalomi D. A.** “The TESS Objects of Interest Catalog from the TESS Prime Mission.” *The Astrophysical Journal Supplement*, 254, 2 (2021).
11. Rodriguez, J. E. et al. **including Yahalomi D. A.** “TESS Delivers Five New Hot Giant Planets Orbiting Bright Stars from the Full Frame Images.” *The Astronomical Journal*, 161, 4 (2021).
10. Zhou, G. et al. **including Yahalomi D. A.** “Two Young Planetary Systems around Field Stars with Ages between 20 and 320 Myr from TESS.” *The Astronomical Journal*, 161, 1 (2021).
9. Brahm, R. et al. **including Yahalomi D. A.** “TOI-481 b and TOI-892 b: Two Long-period Hot Jupiters from the Transiting Exoplanet Survey Satellite.” *The Astronomical Journal*, 160, 5 (2020).

8. Beatty, T. G. et al. **including Yahalomi D. A.** “The TESS Phase Curve of KELT-1b Suggests a High Dayside Albedo.” *The Astronomical Journal*, 160, 211 (2020).
7. Ikwut-Ukwa, M. et al. **including Yahalomi D. A.** “The K2 & TESS Synergy I: Updated Ephemerides and Parameters for K2-114, K2-167, K2-237, & K2-261.” *The Astronomical Journal*, 160, 209 (2020).
6. Wong, I. et al. **including Yahalomi D. A.** “Systematic Phase Curve Study of Known Transiting Systems from Year 1 of the TESS Mission.” *The Astronomical Journal*, 160, 155 (2020).
5. Mireles, I. et al. **including Yahalomi D. A.** “TOI 694 b and TIC 220568520 b: Two Low-Mass Companions Near the Hydrogen Burning Mass Limit Orbiting Sun-like Stars.” *The Astronomical Journal*, 160, 133 (2020).
4. Wong, I., et al. **including Yahalomi, D. A.** “Exploring the atmospheric dynamics of the extreme ultra-hot Jupiter KELT-9b using TESS photometry.” *The Astronomical Journal*, 160, 88 (2020).
3. Dragomir, D. et al. **including Yahalomi D. A.** “Securing the Legacy of TESS through the Care and Maintenance of TESS Planet Ephemerides.” *The Astronomical Journal*, 159, 219 (2020).
2. Diaz, M. R. et al. **including Yahalomi D. A.** “TOI-132 b: A short-period planet in the Neptune desert transiting a V=11.3 G-type star.” *Monthly Notices of the Royal Astronomical Society*, 493, 973 (2020).
1. Rodriguez, J., et al. **including Yahalomi, D. A.** “An Eccentric Massive Jupiter Orbiting a Sub-Giant on a 9.5 Day Period Discovered in the TESS Full Frame Images.” *The Astronomical Journal*, 157, 191 (2019).

Advising

As Primary Advisor

Undergraduate Students:

- Determining the Mass and Radius of the White Dwarfs in Four Kepler Self-Lensing Binaries, 2023 – .
 - **Yassine Abaakil**, Columbia University Undergraduate.

High School Students (through Harvard SRMP):

- Identifying Transit Timing Variations in Planetary Hierarchical Triples, 2022 – 2023.
 - **Farai Sundai**, CRLS 10th Grade.
 - **Jiajing Liu**, CRLS 12th Grade, Currently a University of Minnesota Undergraduate.
 - **Lila Valaskovic**, CRLS 12th Grade, Currently a Colgate Undergraduate.
- Modeling the Radial Velocities of Four Kepler Self-Lensing Binaries, 2020 – 2021.
 - **Mohammed Sakib**, CRLS 11th Grade. Currently a Harvard Undergraduate.
 - **Tsion Tedla**, CRLS 12th Grade, Currently a Boston University Undergraduate.
 - **Victoria Chen**, CRLS 10th Grade, Currently a University of Toronto Undergraduate.

As Co-Advisor

- “Democratically” Detrending TESS M-Dwarfs, Summer 2022.
 - **Andrew Zhang**, Columbia Undergraduate.
 - **Avishi Poddar**, Columbia Undergraduate.
 - **Madison Li**, Columbia Undergraduate.

Outreach

Harvard Science Research Mentoring Program

Cambridge, MA

- **Co-Director** 2021 – 2023
- **Research Project Mentor:** TTV Modeling 2022 – 2023
- **Research Project Mentor:** Self-Lensing Binaries 2020 – 2021
- **Associate Director** 2020 – 2021
- **Head of Observing** 2018 – 2020

Harvard Observing Project

Cambridge, MA

- **Observer:** coordinated and ran weekly observing for undergrads on 16” Clay Telescope. Jan 2019 – March 2020

Professional Activities

- **Journal Referee**, Universe (2023 – present), The Astrophysical Journal (2023 – present).
- **Member**, American Astronomical Society (2018 – present.)
- **Member**, TESS Follow-up Observing Program (2018 – present.)
- **Associate Member**, Sigma Xi (2020 – present.)
- **Science Alliance Member**, New York Academy of Sciences (2020 – present.)

Observing Proposals

As PI

3. **Yahalomi, D. A.** et al. “Photometric Confirmation and Ephemeris Refinement of TESS Planet Candidates.”, MDM McGraw-Hill 1.3m Telescope 2023b, 8 nights.
2. **Yahalomi, D. A.** et al. “Photometric Confirmation and Ephemeris Refinement of TESS Planet Candidates.”, MDM McGraw-Hill 1.3m Telescope 2022a, 4 nights.
1. **Yahalomi, D. A.** et al. “Photometric Confirmation and Ephemeris Refinement of TESS Planet Candidates.”, MDM McGraw-Hill 1.3m Telescope 2022b, 5 nights.

As Co-I or Collaborator

4. Cassese, B. and **Yahalomi, D. A.** “Attempted Recovery of a Distant Trans-Neptunian Object.” MDM Hiltner 2.4m Telescope 2022b, 5 nights.
3. Pooley, D. A. et al. **including Yahalomi D. A.** “Nano-arcsecond Tomography of the Central Regions of the Quasar in SDSS J0924+0219.”, Chandra Cycle 24, Large Target of Opportunity Proposal.
2. Pooley, D. A. et al. **including Yahalomi D. A.** “Nano-arcsecond Tomography of the Central Regions of the Quasar in SDSS J0924+0219.”, Chandra Cycle 23, Large Target of Opportunity Proposal.
1. Angus, R. et al. **including Yahalomi D. A.** “Measuring long rotation periods from TESS light curves.”, NASA TESS Guest Investigator program, Cycle 3, large program.

Selected Talks

- **Weizmann Institute of Science Seminar**, February 2024.
- **University of Colorado APS Seminar**, January 2024.
- **AAS 243rd Meeting**, January 2024.
- **Columbia Pizza Lunch**, February 2023.
- **SwRI Boulder Colloquium**, January 2023.

- **Columbia Pizza Lunch**, October 2021.
- **Harvard CfA Stars and Planets Seminar**, May 2021.
- **AAS 237th Meeting**, January 2021
- **Princeton Exoplanet Lunch Meeting**, November 2019.
- **Harvard CfA Exoplanet Pizza Lunch**, November 2019.
- **AAS 233rd Meeting**, January 2019.
- **MIT Cosmology Undergraduate Workshop**, August 2017.
- **Columbia Nevis Laboratory**, June 2017.
- **Manhattan Microlensing Conference**, June 2017.

Teaching

Columbia Astronomy Department

New York, NY

- **Teaching Assistant:** Astrostatistics ... Graduate & Undergraduate Course
- **Instructor:** Observing TA ... Undergraduate Course
- **Teaching Assistant:** Earth, Moon, and Planets ... Undergraduate Course
- **Teaching Assistant:** Stars and Atoms ... Undergraduate Course
- **Teaching Assistant:** Another Earth ... Undergraduate Course

Spring 2023

2021 - 2022

Summer 2021

Spring 2021

Fall 2020

MIT Physics Department

Cambridge, MA

- **Teaching Assistant:** Intro to Mechanics Review (8.01R)

Jan 2015

Athletics

15th European Maccabi Games

Budapest, Hungary

USA Water Polo Team Member. Silver Medal Winner.

Aug 2019

MIT Varsity Water Polo Team

Cambridge, MA

Captain (2017). DIII Eastern Champions (2014, 2016). DI Nationally Ranked 20th (2015).

Aug 2014 - Nov 2017