Daniel A. Yahalomi

daniel.yahalomi@columbia.edu | danielyahalomi.com | dyahalomi

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

- **Thesis**, Developing a Framework for Detecting Unseen Worlds.
- **Advisor**, Professor David Kipping

Massachusetts Institute of Technology *Cambridge, MA*

B.S. in Physics with Concentration in Astronomy *2014-2018*

Minors in Computer Science and Comparative Media Studies

- **Thesis**, Statistical Analyses of Gravitational Microlensing Probability Densities.
- **Advisor**, Professor Paul L. Schechter

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 Appoitments

- **Dean's Fellowship**, Columbia GSAS: 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

- **LSSTC DSFP Fellow**: 2023-2025.
- **AAS NOLP Fellow**: 2023-2025.
- **NSF GRFP Honorable Mention**: 2020.
- **Sigma Xi**, Associate Member: 2020 – .
- **New York Academy of Sciences**, Science Alliance Member: 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.

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, *accepted*, arXiv: 2310.03802, 2023.
3. **Yahalomi, D. A.** et al. "Detecting Solar System Analogs through Joint Radial Velocity/Astrometric Surveys" The Astronomical Journal, *under review*, arXiv: 2302.05064, 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 ideas, wrote code, ran code, analyzed results, and/or wrote part of the manuscript.

4. 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).
3. 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).
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.

18. Giacalone, S. et al. **including Yahalomi D. A.** "Validation of 13 Hot and Potentially Terrestrial TESS Planets." The Astronomical Journal, 163, 2 (2022).
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** (grew applicants from 16 in 2020 to 42 in 2023) — *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*

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

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

Teaching

Columbia Astronomy Department — *New York, NY*

– **Teaching Assistant:** Astrostatistics ... Graduate & Undergraduate Course — *Spring 2023*
– **Instructor:** Observing TA ... Undergraduate Course — *2021 – 2022*
– **Teaching Assistant:** Earth, Moon, and Planets ... Undergraduate Course — *Summer 2021*
– **Teaching Assistant:** Stars and Atoms ... Undergraduate Course — *Spring 2021*
– **Teaching Assistant:** Another Earth ... Undergraduate Course — *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*

London Marathon *Cambridge, MA*

Charity Entry through the “Children of Peru” Foundation. *April 2017*