

Tansu Daylan

Assistant Professor of Physics
Department of Physics, Washington University in St. Louis
One Brookings Drive, St. Louis, MO 63130
Compton 453, tansu@wustl.edu,
<https://www.tansudaylan.com>
<https://sites.wustl.edu/astromusers/>
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Education

- 2018, Ph.D. in Physics, Harvard University, Cambridge, MA, US
- 2015, MA in Physics, Harvard University, Cambridge, MA, US
- 2013, BS in Physics (double major), Middle East Technical University (METU), Ankara, Turkey
- 2012, BS in Electrical and Electronics Engineering, METU, Ankara, Turkey
- 2008, Robert College, Istanbul, Turkey

Positions

- Since August 2023, Assistant Professor of Physics, Washington University, St. Louis, MO, US
- June 2022 - July 2023, Postdoctoral Research Associate, Princeton University, Princeton, NJ, US
- June 2021 - May 2022, Visiting Postdoctoral Associate, Princeton University, Princeton, NJ, US
- June 2021 - May 2022, TESS Postdoctoral Associate, MIT, Cambridge, MA, US
- June 2018 - May 2021, Kavli Fellow, MIT, Cambridge, MA, US
- 2013-2018, Research/Teaching Fellow, Harvard University, Cambridge, MA, US
- 2011-2013, Teaching Assistant, METU, Ankara, Turkey

Research Statement

I have had the exciting opportunity to make contributions in the fields of exoplanets and cosmology. My research footprint can be accessed via [Google Scholar](#). My Ph.D. thesis was A Transdimensional Perspective on Dark Matter (2018), advised by Douglas P. Finkbeiner.

Select Research Achievements

- Led the discovery of four small exoplanets transiting a bright, Sun-like star, HD 108236 (Daylan et al. 2021a),
- Significantly contributed to the characterization of over 50 exoplanets (e.g., Daylan et al. 2021b),
- Co-developed the inference framework to model stars and exoplanets (Günther&Daylan2021),
- Led the group vetting of the NASA TESS mission, enabling the discovery of over 6,000 exoplanet candidates,
- Developed transdimensional gravitational imaging to probe the structure of dark matter (Daylan et al. 2018),
- Constructed a novel statistical method to perform transdimensional inference (Daylan et al. 2017),
- Revealed the consistency between the GeV excess in the inner Galaxy and WIMP annihilation (Daylan et al. 2016).

Select Awards and Achievements

- Scialog Fellowship, RCSA, 2024
- Outstanding Achievement Award, WashU Physics, 2023
- Selected by NASA to participate in the ULTRASAT mission as a US PI, 2023
- Selected to participate in the NASA PI Launchpad at the University of Michigan, 2023
- LSST Discovery Alliance Catalyst Fellowship, John Templeton Foundation, 2022
- Selected into NASA FDL Research Team, 2020
- MIT Kavli Fellowship, Kavli Foundation, 2018
- MIT Translational Fellowship, 2018
- AAS Chambliss Competition Honorable Mention, 2015
- WorldQuant Fellowship, 2014
- Harvard Purcell Fellowship, 2013
- Undergraduate Physics Research Award, Bilkent University, 2013

- Selected among the young researchers to attend the Lindau Nobel Laureates Meeting, 2012
- Featured by the Scientific American in the “30 under 30” list, 2012
- Bulent Kerim Altay Award, METU, 2008 and 2009
- Great Achievement Fellowship, Prime Ministry of the Turkish Republic, 2008
- Superior Success Fellowship, Turkish Education Foundation, 2008
- Higher Education Examination Achievement Award, Fen Bilimleri, 2008
- Ranked 10th among 1.5 million participants (99.999th percentile) in the Higher Education Examination, 2008

Select awarded grants as PI

- \$150,000, **Maximizing JWST and Roman Dark Matter Science with Strong Gravitational Lensing**, 2024, FINESST23
- \$49,883, **The Geostationary Adjunct to TESS: TESS-GEO**, 2024, MCSS FY25 Project Support
- \$39,700, **Confronting the next decade of data-intensive astronomy ushered by LSST**, 2024, TRIADS Project Support
- \$299,966, **Preparing for a leap: Precursor Strong Lensing Science with Roman Towards Precision Cosmology**, 2023, 22-ROMAN22-0072, NASA Roman Research and Support Program
- \$93,544, **ExoCore: An open science curriculum for enhanced reproducibility and equity in exoplanet research**, 2023, NASA Transform to Open Science Training (TOPST)
- \$69,970, **Hunting For Black Holes With TESS**, 2021, TESS Guest Investigator (GI) Program, Cycle 4, ID G04190.
- \$5,000, **Robust Census of Long-Period Solar System and Interstellar Objects with LSST**, 2021, LSSTC
- \$5,000, **A Cloud-accelerated hunt for black holes with TESS**, 2021, Azure Cloud Credits, Princeton University

Select awarded observational resources as PI

- ULTRASAT US PI program. **Empowering ULTRASAT’s Legacy on Planetary Habitability: a survey of stellar flares and space weather beyond the Solar System**, 22-UTASPS22-0033
- 2-minute cadence targets. **Mapping Star Spots Using TESS**, TESS GI Program, Cycle 4, ID G04206.
- 2-minute cadence targets. **Searching For Compact Objects With Stellar Companions Using TESS**, TESS GI, Cycle 3, ID G03254.
- 1.5 nights. **Revealing the dynamical history of an exceptional multiplanetary system with small transiting planets and a bright host**, Magellan Clay/PFS, 2021A.
- 1 night. **Probing the spin-orbit alignment of a rich and compact multiplanetary system TOI-1233**, Magellan Clay/PFS, 2022A.

Select awarded grants as non-PI

- \$67,000, **Disintegrating Rocky Bodies Transiting White Dwarfs: The Key To Understanding Exoplanet Compositions**, 2021, TESS GI Program, Cycle 4, ID G04200, PI: Vanderburg.
- \$50,000, **A Systematic Study To Characterize Rapid Optical Variability Of AGN And Search For Quasi-Periodic Oscillations**, 2021, TESS GI Program, Cycle 4, ID G04215, PI: Pasham.
- \$50,000, **A Systematic Study Of TESS Orbital Phase Curves**, 2021, TESS GI Program, Cycle 4, ID G04096, PI: Shporer.
- \$44,999.55, **Disintegrating Rocky Bodies Transiting White Dwarfs: The Key To Understanding Exoplanet Compositions**, 2020, TESS GI Program, Cycle 3, ID G03207, PI: Vanderburg.
- \$50,000, **A Systematic Study Of TESS Orbital Phase Curves**, 2020, TESS GI Program, Cycle 3, ID G03232, PI: Shporer.
- \$43,000, **Disintegrating Rocky Bodies Transiting White Dwarfs: The Key To Understanding Exoplanet Compositions**, 2019, TESS GI Program, Cycle 2, ID G022077, PI: Vanderburg.
- \$89,000, **Atmospheric characterization of two temperate mini-Neptunes formed in the same protoplanetary nebula**, 2019, HST Proposal, Cycle 27, ID 15814, PI: Mikal-Evans.

Publications

First author

Peer-reviewed

1. Daylan, **The legacy of TESS: a census of transiting exoplanets in our galactic neighborhood**
TJAA, 4:79-82, 2023, [doi:10.55064/tjaa.1203862](https://doi.org/10.55064/tjaa.1203862)
2. Daylan et al., **TESS discovery of a super-Earth and three sub-Neptunes hosted by the bright, Sun-like star HD 108236**
AJ, 161:85, February 2021, [doi:10.3847/1538-3881/abd73e](https://doi.org/10.3847/1538-3881/abd73e), [arXiv:2004.11314](https://arxiv.org/abs/2004.11314)
3. Daylan et al., **TESS observations of the WASP-121 b phase curve**
AJ, 161:131, March 2021, [doi:10.3847/1538-3881/abd8d2](https://doi.org/10.3847/1538-3881/abd8d2), [arXiv:1909.03000](https://arxiv.org/abs/1909.03000)
4. Daylan et al., **Probing the Small-scale Structure in Strongly Lensed Systems via Transdimensional Inference**
ApJ, 854:141, February 2018, [doi:10.3847/1538-4357/aaaa1e](https://doi.org/10.3847/1538-4357/aaaa1e), [arXiv:1706.06111](https://arxiv.org/abs/1706.06111)
5. Daylan et al., **Inference of Unresolved Point Sources at High Galactic Latitudes Using Probabilistic Catalogs**
ApJ, 839:4, April 2017, [doi:10.3847/1538-4357/aa679e](https://doi.org/10.3847/1538-4357/aa679e), [arXiv:1607.04637](https://arxiv.org/abs/1607.04637)
6. Daylan et al., **The characterization of the gamma-ray signal from the central Milky Way: A case for annihilating dark matter**
Physics of the Dark Universe, 12:1-23, June 2016, [doi:10.1016/j.dark.2015.12.005](https://doi.org/10.1016/j.dark.2015.12.005), [arXiv:1402.6703](https://arxiv.org/abs/1402.6703)

Non-peer-reviewed

7. Daylan & Birrer, **Searching for dark matter substructure: a deeper wide-area community survey for Roman**
Roman Core Community Survey White Paper, June 2023, [arXiv:2306.12864](https://arxiv.org/abs/2306.12864)

Second or third author

Peer-reviewed

8. Whitsett & Daylan, **Planet-induced stellar flare candidates from the TESS mission**
submitted to ApJ
9. Esmer & Daylan, **Eclipse Timing Variations of Circumbinary Substellar Objects in TESS Data**
submitted to AJ, [arXiv:2503.20900](https://arxiv.org/abs/2503.20900)
10. Cappiello & Daylan, **Can a Dark Inferno Melt Earth's Core?**
submitted to PRD, [arXiv:2505.24070](https://arxiv.org/abs/2505.24070)
11. Kaya & Daylan, **Radio prospects of extrasolar aurorae polaris as a probe of planetary magnetism**
accepted to ApJ, [arXiv:2506.04604](https://arxiv.org/abs/2506.04604)
12. Wedig, Daylan, et al., **The Roman View of Strong Gravitational Lenses**
ApJ, 986:42, June 2025, [doi:10.3847/1538-4357/adc24f](https://doi.org/10.3847/1538-4357/adc24f), [arXiv:2506.03390](https://arxiv.org/abs/2506.03390)
13. Vlahakis, Daylan, et al., **Designing a Near-Earth Asteroid Survey for a Telescope in Geosynchronous Orbit**
2025 IEEE Aerospace Conference, pp. 1-10, March 2025, [doi:10.1109/AERO63441.2025.11068648](https://doi.org/10.1109/AERO63441.2025.11068648)
14. Feder, Butler, Daylan, et al., **PCAT-DE: Reconstructing point-like and diffuse signals in astronomical images using spatial and spectral information**
AJ, 166:98, September 2023, [doi:10.3847/1538-3881/ace69b](https://doi.org/10.3847/1538-3881/ace69b), [arXiv:2307.10385](https://arxiv.org/abs/2307.10385)
15. Butler, Feder, Daylan, et al., **Measurement of the Relativistic Sunyaev-Zeldovich Corrections in RX**

16. Kunimoto, Daylan, et al., **The TESS Faint Star Search: 1,617 TOIs from the TESS Primary Mission**
ApJS, 259:33, April 2022, doi:10.3847/1538-4365/ac5688 arXiv:2112.02176
17. Günther & Daylan. **Allesfitter: Flexible Star and Exoplanet Inference From Photometry and Radial Velocity**
ApJS, 254:13, May 2021, doi:10.3847/1538-4365/abe70e, arXiv:2003.14371
18. Wong, Shporer, Daylan, et al., **Systematic Phase Curve Study of Known Transiting Systems from Year 1 of the TESS Mission**
AJ, 160:155, October 2020, doi:10.3847/1538-3881/ababad, arXiv:2003.06407
19. Badenas-Agusti, Günther, Daylan, et al., **HD 191939: Three Sub-Neptunes Transiting a Sun-like Star Only 54 pc Away**
AJ, 160 113, September 2020, doi:10.3847/1538-3881/aba0b5, arXiv:2002.03958
20. Feder, Portillo, Daylan, et al., **Multiband Probabilistic Cataloging: A Joint Fitting Approach to Point Source Detection and Deblending**
AJ, 159:163, April 2020, doi:10.3847/1538-3881/ab74cf, arXiv:1907.04929
21. Portillo, Lee, Daylan, et al., **Improved Point-source Detection in Crowded Fields Using Probabilistic Cataloging**
AJ, 154:132, October 2017, doi:10.3847/1538-3881/aa8565, arXiv:1703.01303

Non-peer-reviewed

22. Kunimoto, Bryson, Daylan, et al., **False Alarms Revealed in a Planet Search of TESS Light Curves**
RNAAS, 7:7, January 2023, doi:10.3847/2515-5172/acb149 arXiv:2301.01900

Others**Peer-reviewed**

23. Chandler et al., **NSF-DOE Vera C. Rubin Observatory Observations of Interstellar Comet 3I/ATLAS (C/2025 N1)**
Submitted, arXiv:2507.13409
24. Sagynbayeva et al., **Optimizing Habitable Worlds Observatory's Orbital Characterization of Cold Giants and Habitable Worlds**
Submitted
25. Kunimoto et al., **LEO-Vetter: Fully Automated Flux- and Pixel-Level Vetting of TESS Planet Candidates to Support Occurrence Rates**
Submitted
26. Greklek-McKeon et al., **Confirmation of a Third Earth-sized Planet in the TOI-2267 Binary System**
Submitted
27. Frensch et al., **Three non-inflated Hot Jupiters transiting K-dwarfs with a significant heavy element mass**
Submitted
28. Kahle et al., **The SPACE Program I: The featureless spectrum of HD 86226 c challenges sub-Neptune atmosphere trends**
Accepted to A&A, July 2025, arXiv:2507.13439
29. Blunt et al., **Statistical Capability of the Habitable Worlds Observatory for Constraining Ozone**

30. Bryant et al., **A transiting giant planet in orbit around a 0.2-solar-mass host star**
Nature Astronomy, 9:10311044, June 2025 [doi:10.1038/s41550-025-02552-4](#), [arXiv:2506.07931](#)
31. Jenkins et al., **An Eccentric Sub-Neptune Moving Into the Evaporation Desert**
Accepted to ApJL, May 2025 [arXiv:2505.10324](#)
32. Kroft et al., **A Pair of Dynamically Interacting Sub-Neptunes Around TOI-6054**
Accepted to AJ, January 2025 [arXiv:2501.09095](#)
33. Crossfield et al., **OrCAS: Origins, Compositions, and Atmospheres of Sub-neptunes. I. Survey Definition**
AJ, 169:89, January 2025 [doi:10.3847/1538-3881/ad9aa6](#), [arXiv:2411.16836](#)
34. Kunimoto et al., **TOI-6276: Two Earth-size Planets and an Earth-size Candidate Transiting the Nearby Star HD 101581**
AJ, 169:47, December 2024 [doi:10.3847/1538-3881/ad9266](#), [arXiv:2412.08863](#)
35. Alqasim et al., **TOI-757 b: an eccentric transiting mini-Neptune on a 17.5-d orbit**
MNRAS, 533, 1-26, September 2024, [doi:10.1093/mnras/stae1767](#), [arXiv:2407.20525](#)
36. Rhoads et al., **ULTRASAT: NASA’s role in mission development and science**
Proceedings of the SPIE, 13093, 1309335, August 2024, [doi:10.1117/12.3020626](#)
37. Reynolds et al., **Overview of the Advanced X-ray Imaging Satellite (AXIS)**
Proceedings of the SPIE, 1309328, August 2024, [doi:10.1117/12.3022993](#), [arXiv.org:2311.00780](#)
38. Carter et al., **A benchmark JWST near-infrared spectrum for the exoplanet WASP-39 b**
Nature Astronomy, 8:1008-1019, August 2024, [doi:10.1038/s41550-024-02292-x](#), [arXiv:2407.13893](#)
39. Saunders et al., **TESS Giants Transiting Giants. VI. Newly Discovered Hot Jupiters Provide Evidence for Efficient Obliquity Damping after the Main Sequence**
AJ, 168:81, August 2024, [doi:10.3847/1538-3881/ad543b](#), [arXiv:2407.21650](#)
40. de Wit et al., **A roadmap to the efficient and robust characterization of temperate terrestrial planet atmospheres with JWST**
Nature Astronomy, 8:810-818, July 2024, [doi:10.1038/s41550-024-02298-5](#), [arXiv:2310.15895](#)
41. Silverstein et al., **Validation of a Third Planet in the LHS 1678 System**
AJ, 167:255, June 2024, [doi:10.3847/1538-3881/ad3040](#), [arXiv:2403.00110](#)
42. Battley et al., **NGTS-30 b/TOI-4862 b: An 1 Gyr old 98-day transiting warm Jupiter**
A&A, 686:A230, June 2024, [doi:10.1051/0004-6361/202449307](#) [arXiv:2404.02974](#)
43. Hord et al., **Identification of the Top TESS Objects of Interest for Atmospheric Characterization of Transiting Exoplanets with JWST**
AJ, 167:233, May 2024, [doi:10.3847/1538-3881/ad3068](#), [arXiv:2308.09617](#)
44. Psaridi et al., **Discovery of two warm mini-Neptunes with contrasting densities orbiting the young K3V star TOI-815**
A&A, 685:A5, May 2024, [doi:10.1051/0004-6361/202348678](#) [arXiv:2401.15709](#)
45. Orell-Miquel et al., **Revisiting the warm sub-Saturn TOI-1710b. The impact of stellar activity on the mass measurement**
A&A, 684:A96, April 2024, [doi:10.1051/0004-6361/202348131](#), [arXiv:2401.13574](#)

46. Pasham et al., **A case for a binary black hole system revealed via quasi-periodic outflows**
Science Advances, 10, 13:eadj8898, March 2024, doi:10.1126/sciadv.adj889, arXiv:2402.10140
47. Reynolds et al., **Overview of the Advanced X-ray Imaging Satellite (AXIS)**
Proceedings of the SPIE, 126781E, October 2023, doi:10.1117/12.2677468, arXiv.org:2311.00780
48. Fausnaugh et al., **Four years of Type Ia Supernovae Observed by TESS: Early Time Light Curve Shapes and Constraints on Companion Interaction Models**
ApJ, 956:108, October 2023, doi:10.3847/1538-4357/aceaef, arXiv:2307.11815
49. Esparza-Borges et al., **Detection of Carbon Monoxide in the Atmosphere of WASP-39b Applying Standard Cross-correlation Techniques to JWST NIRSpec G395H Data**
ApJL, 955:L19, September 2023, doi:10.3847/2041-8213/acf27b, arXiv:2309.00036
50. Hawthorn et al., **TOI-908: a planet at the edge of the Neptune desert transiting a G-type star**
MNRAS, 524, 3877-3893, September 2023, doi:10.1093/mnras/stad1840 arXiv:2306.09758
51. Rojas et al., **The impact of human expert visual inspection on the discovery of strong gravitational lenses**
MNRAS, 523, 4413-4430, August 2023, doi:10.1093/mnras/stad1680, arXiv:2301.03670
52. Dai et al., **A Mini-Neptune Orbiting the Metal-poor K Dwarf BD+29 2654**
AJ, 166:49, August 2023, doi:10.3847/1538-3881/acdee8 arXiv:2306.08179
53. Psaridi et al., **Three Saturn-mass planets transiting F-type stars revealed with TESS and HARPS. TOI-615b, TOI-622b, and TOI-2641b**
A&A, 675:A39, July 2023, doi:10.1051/0004-6361/202346406 arXiv:2303.15080
54. Brahm et al., **Three Long-period Transiting Giant Planets from TESS**
AJ, 165:227, June 2023, doi:10.3847/1538-3881/accadd arXiv:2304.02139
55. Schwamb et al., **Tuning the Legacy Survey of Space and Time (LSST) Observing Strategy for Solar System Science**
ApJS, 266:22, June 2023, doi:10.3847/1538-4365/acc173 arXiv:2303.02355
56. Tsai et al., **Photochemically produced SO₂ in the atmosphere of WASP-39b**
Nature, 617:483-487, May 2023, doi:10.1038/s41586-023-05902-2 arXiv:2211.10490
57. Grant et al., **Detection of Carbon Monoxide's 4.6 Micron Fundamental Band Structure in WASP-39 b's Atmosphere with JWST NIRSpec G395H**
ApJL, 949:L15, May 2023, doi:10.3847/2041-8213/acd544 arXiv:2304.11994
58. Yee et al., **The TESS Grand Unified Hot Jupiter Survey. II. Twenty New Giant Planets**
ApJS, 265:1, March 2023, doi:10.3847/1538-4365/aca286 arXiv:2210.15473
59. Tey et al., **Identifying Exoplanets with Deep Learning. V. Improved Light-curve Classification for TESS Full-frame Image Observations**
AJ, 165:95, March 2023, doi:10.3847/1538-3881/acad85 arXiv:2301.01371
60. Mikal-Evans et al., **Hubble Space Telescope Transmission Spectroscopy for the Temperate Sub-Neptune TOI-270 d: A Possible Hydrogen-rich Atmosphere Containing Water Vapor**
AJ, 165:84, March 2023, doi:10.3847/1538-3881/aca90b arXiv:2211.15576
61. Heitzmann et al., **TOI-4562b: A Highly Eccentric Temperate Jupiter Analog Orbiting a Young Field Star**
AJ, 165:121, March 2023 doi:10.3847/1538-3881/acb5a2 arXiv:2208.10854

62. Anderson et al., **Early Release Science of the exoplanet WASP-39b with JWST NIRSpec G395H**
Nature, 614:664-669, February 2023, [doi:10.1038/s41586-022-05591-3](https://doi.org/10.1038/s41586-022-05591-3) [arXiv:2211.10488](https://arxiv.org/abs/2211.10488)
63. Rustamkulov et al., **Early Release Science of the exoplanet WASP-39b with JWST NIRSpec PRISM**
Nature, 614:659-663, February 2023, [doi:10.1038/s41586-022-05677-y](https://doi.org/10.1038/s41586-022-05677-y) [arXiv:2211.10487](https://arxiv.org/abs/2211.10487)
64. Ahrer et al., **Early Release Science of the exoplanet WASP-39b with JWST NIRCам**
Nature, 614:653-658, February 2023, [doi:10.1038/s41586-022-05590-4](https://doi.org/10.1038/s41586-022-05590-4) [arXiv:2211.10489](https://arxiv.org/abs/2211.10489)
65. JTEC ERS Team, **Identification of carbon dioxide in an exoplanet atmosphere**
Nature, 614:649-652, February 2023, [doi:10.1038/s41586-022-05269-w](https://doi.org/10.1038/s41586-022-05269-w) [arXiv:2208.11692](https://arxiv.org/abs/2208.11692)
66. Saydjari et al., **The Dark Energy Camera Plane Survey 2 (DECaPS2): More Sky, Less Bias, and Better Uncertainties**
ApJS, 264:28, February 2023, [doi:10.3847/1538-4365/aca594](https://doi.org/10.3847/1538-4365/aca594) [arXiv:2206.11909](https://arxiv.org/abs/2206.11909)
67. Delrez et al., **Two temperate super-Earths transiting a nearby late-type M dwarf**
A&A, 667:A59, November 2022, [doi:10.1051/0004-6361/202244041](https://doi.org/10.1051/0004-6361/202244041) [arXiv:2209.02831](https://arxiv.org/abs/2209.02831)
68. Newton et al., **TESS Hunt for Young and Maturing Exoplanets (THYME). VII. Membership, Rotation, and Lithium in the Young Cluster Group-X and a New Young Exoplanet**
AJ, 164:115, September 2022, [doi:10.3847/1538-3881/ac8154](https://doi.org/10.3847/1538-3881/ac8154) [arXiv:2206.06254](https://arxiv.org/abs/2206.06254)
69. Zhou et al., **A Mini-Neptune from TESS and CHEOPS Around the 120 Myr Old AB Dor Member HIP 94235**
AJ, 163:289, June 2022, [doi:10.3847/1538-3881/ac69e3](https://doi.org/10.3847/1538-3881/ac69e3) [arXiv:2204.11975](https://arxiv.org/abs/2204.11975)
70. Günther et al., **Complex Modulation of Rapidly Rotating Young M Dwarfs: Adding Pieces to the Puzzle**
AJ, 163:144, April 2022, [doi:10.3847/1538-3881/ac503c](https://doi.org/10.3847/1538-3881/ac503c) [arXiv:2008.11681](https://arxiv.org/abs/2008.11681)
71. Silverstein et al., **The LHS 1678 System: Two Earth-Sized Transiting Planets and an Astrometric Companion Orbiting an M Dwarf Near the Convective Boundary at 20 pc**
AJ, 163:151, April 2022, [doi:10.3847/1538-3881/ac32e3](https://doi.org/10.3847/1538-3881/ac32e3) [arXiv:2110.12079](https://arxiv.org/abs/2110.12079)
72. Serrano et al., **A low-eccentricity migration pathway for a 13-h-period Earth analogue in a four-planet system**
Nature Astronomy, 6:736-750, April 2022, [doi:10.1038/s41550-022-01641-y](https://doi.org/10.1038/s41550-022-01641-y) [arXiv:2204.13573](https://arxiv.org/abs/2204.13573)
73. Kaye et al., **Transit timings variations in the three-planet system: TOI-270**
MNRAS 510:5464-5485, March 2022, [doi:10.1093/mnras/stab3483](https://doi.org/10.1093/mnras/stab3483)
74. Espinoza et al., **A Transiting, Temperate Mini-Neptune Orbiting the M Dwarf TOI-1759 Unveiled by TESS**
AJ, 163:133, March 2022, [doi:10.3847/1538-3881/ac4af0](https://doi.org/10.3847/1538-3881/ac4af0) [arXiv:2202.01240](https://arxiv.org/abs/2202.01240)
75. Heidari et al., **HD 207897 b: A dense sub-Neptune transiting a nearby and bright K-type star**
A&A, 658:A176, February 2022, [doi:10.1051/0004-6361/202141429](https://doi.org/10.1051/0004-6361/202141429) [arXiv:2110.08597](https://arxiv.org/abs/2110.08597)
76. Huber et al., **A 20-Second Cadence View of Solar-Type Stars and Their Planets with TESS: Asteroseismology of Solar Analogs and a Recharacterization of pi Men c**
AJ, 163:79, February 2022, [doi:10.3847/1538-3881/ac3000](https://doi.org/10.3847/1538-3881/ac3000) [arXiv:2108.09109](https://arxiv.org/abs/2108.09109)
77. Mikal-Evans et al., **Diurnal variations in the stratosphere of the ultrahot giant exoplanet WASP-121b**
Nature Astronomy, 6:471-479, February 2022, [doi:10.1038/s41550-021-01592-w](https://doi.org/10.1038/s41550-021-01592-w) [arXiv:2202.09884](https://arxiv.org/abs/2202.09884)

78. Trifonov et al., **A pair of warm giant planets near the 2:1 mean motion resonance around the K-dwarf star TOI-2202**
AJ, 162:283, December 2021, doi:10.3847/1538-3881/ac1bbe arXiv:2108.05323
79. Addison et al., **TOI-1431b/MASCARA-5b: A Highly Irradiated Ultra-Hot Jupiter Orbiting One of the Hottest & Brightest Known Exoplanet Host Stars**
AJ, 162:292, December 2021, doi:10.3847/1538-3881/ac224e arXiv:2104.12078
80. Wong et al., **Visible-light Phase Curves from the Second Year of the TESS Primary Mission**
AJ, 162:127, October 2021, doi:10.3847/1538-3881/ac0c7d, arXiv:2106.02610
81. Wells et al., **A large sub-Neptune transiting the thick-disk M4V TOI-2406**
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83. Krishnamurthy et al., **Transit Search for Exoplanets around Alpha Centauri A and B with ASTERIA**
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AJ, 160:116, September 2020, doi:10.3847/1538-3881/aba4b2, arXiv:2001.00952
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113. Günther et al., **A Super-Earth and two sub-Neptunes transiting the bright, nearby, and quiet M-dwarf TOI-270**
Nature Astronomy, 3:1099-1108, July 2019, [doi:10.1038/s41550-019-0845-5](https://doi.org/10.1038/s41550-019-0845-5), [arXiv:1903.06107](https://arxiv.org/abs/1903.06107)
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119. Street et al., **Maximizing science return by coordinating the survey strategies of Roman with Rubin, and other major facilities**
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120. Han et al., **NANCY: Next-generation All-sky Near-infrared Community surveyY**
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121. Collett et al., **The 4MOST Strong Lensing Spectroscopic Legacy Survey (4SLSLS)**
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122. Adhikari et al., **Report of the Topical Group on Cosmic Probes of Fundamental Physics for Snowmass 2021**
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123. Engel et al., **The Future of Gamma-Ray Experiments in the MeV-EeV Range**
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124. Mao et al., **Snowmass2021: Vera C. Rubin Observatory as a Flagship Dark Matter Experiment**
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125. Leane et al., **Snowmass2021 Cosmic Frontier White Paper: Puzzling Excesses in Dark Matter Searches and How to Resolve Them**
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ICRC 2013, Rio De Janeiro, Brazil, 2013
128. J. Casaus et al., **Determination of the positron anisotropy with AMS**
ICRC 2013, Rio De Janeiro, Brazil, 2013
129. V. Choutko et al., **Precision Measurement of the Cosmic Ray Helium Flux with AMS Experiment**
ICRC 2013, Rio De Janeiro, Brazil, 2013
130. S. Haino et al., **Precision measurement of the proton flux with AMS**
ICRC 2013, Rio De Janeiro, Brazil, 2013
131. A. Oliva et al., **Precision Measurement of the Cosmic Ray Boron-to-Carbon Ratio with AMS**
ICRC 2013, Rio De Janeiro, Brazil, 2013
132. B. Bertucci et al., **Precision measurement of the $e^+ + e^-$ spectrum with AMS**
ICRC 2013, Rio De Janeiro, Brazil, 2013

Select Professional activities

- HWO Demographics and Architectures steering committee member (since April 2024)
- AAS Agent for WashU (since March 2024)
- LOC member for MCSS 50th year Symposium
- Colloquium Committee Chair (AY 2023-2024, 2024-2025), Graduate Admissions Committee chair (AY 2024-2025, 2025-2026), Undergraduate Studies Committee member (AY 2024-2025) in the Physics Department at Washington University
- SOC member for the Workshop on Internal Structure and Evolution of Planets (GIYE), November 28-29, 2023
- President (2020-2021) and Human Affairs Chair (2019-2020) of the MIT Postdoctoral Association
- TESS Science Office exoplanet vetting co-lead (2018-2023)
- NOIRLab Telescope Allocation Committee member 2020A, 2020B, 2021A, 2021B, and 2022A
- Proposal reviewer for NSF, NASA XRP, HST, JWST, NASA FDL, NASA Postdoctoral Program, ORAU, and NASA FINESST proposals
- Proposal reviewer for NASA PI Launchpad in 2025
- Paper referee for the AAS journals AJ, ApJ, ApJS, A&A, PRL, PRD
- Paper reviewer for the Supercomputing 2025 (SC25) conference in November 2025 in Saint Louis
- Member of the MAST User Group (MUG) 2022, 2023
- Session Chair and/or Organizer in AAS235, AAS237, and TESS Science Conference II
- Organizer for the TESS Science Conference Atmospheric Characterization Splinter Session, 2021
- Editorial board member for the Turkish Journal of Physics (since 2019)
- LOC member for TESS Science Conference I and "Gravitational Waves: New Challenges and Opportunities" (2019)
- Organizer of the MIT Exoplanet Journal Club (2018-2020)
- Member of the Science Council for the East Anatolian Observatory (since 2019)
- American Physical Society, American Astronomical Society, International Astronomical Union (IAU)
- TESS Atmospheric Characterization, Follow-up, and Objects of Interest Working Groups
- LSST Science Collaborations: Dark Energy (DESC), Transients and Variable Stars (TVS), Solar System (SSSC), and Strong Lensing (SLSC)
- Associate member of CERN and AMS-02 Collaboration, 2011-2013

Mentoring

Ph.D. advisor and committee chair for Bryce Wedig (WashU Physics), Nathan Whitsett (WashU Physics), Aysu Ece Saricaoglu (WashU Physics), Kelvin Zhang (WashU SDS)

Research advisor for master's student Peifeng Peng (WashU Physics)

Ph.D. thesis committee member for Ao Zhang (WashU Physics); Gabrielle Adams (WashU EEPs); Sophia Kay Vlahakis (MIT); Nick Sorabella (U Massachusetts Lowell) defended July 15, 2024,

Undergraduate senior thesis committee member for Emily Murray (Princeton), Siegfried Gawenda (Princeton), Emma Chickles (Wellesley→MIT), Lindsey Gordon (Wellesley→UMinnesota)

Other research mentees:

- Graduate students: Mariona Badenas-Agusti (MIT), Yadira Gaibor (MIT),
- Undergraduates: Richard Feder (Harvard→Caltech), Vikram Bhamre (UC Berkeley), Aman Burman (Caltech), Wolf Cukier (Princeton→U Chicago)
- High school research interns mentored as a postdoc (2018-2022): Ashley Davidson (Stanford), Rohan Subramani (Columbia), Kartik Pingle (MIT), Jasmine Wright (UC Boulder), Rom Fradkin (MIT), Deniz Arıkan (Stanford)

I am a Level 1 Trained Facilitator CIMER Mentor. Mentor experience:

- Transdisciplinary Mentoring Community (TMC) Mentor, Arts and Sciences at WashU (2024-2025 AY)
- APS National Mentoring Community Mentorship Program (one mentee during the 2023-2024 AY)
- LSST Dark Energy Science Collaboration Mentorship Program (two mentees during the 2023-2024 AY)
- Princeton University ReMatch Program (four mentees during the 2021-2022 AY)
- Harvard-MIT Science Research Mentoring Program (two mentees during the 2019-2020 AY)
- MIT Mentor Advocate Partnership (one mentee during the 2018-2019 AY)

Select teaching experience

- Spring 2026 (planned), Galactic Astrophysics, Washington University, St. Louis, MO, US
- Fall 2022, 2023, 2024, Research Seminar (Physics 582), Washington University, St. Louis, MO, US
- Spring 2025, Astrostatistics (Physics 4680/5680), Washington University, St. Louis, MO, US
- Fall 2024, Gateway Expeditions into Exoplanets (Physics 1210), Washington University, St. Louis, MO, US
- Fall 2023, Fall 2025 (planned), Planets and Life in the Universe (Physics 3330/5330), Washington University, St. Louis, MO, US
- Spring 2021, MIT Kaufman Teaching Certificate Program, MIT, Cambridge, MA, US
- Spring 2021, Guest Lecturer, Spec Seminar: Planetary Science, MIT, Cambridge, MA, US
- Fall 2020, Guest Lecturer, Selected Topics in Graduate Physics, 8.398, MIT, Cambridge, MA, US
- Summer 2019, Lecturer, "Quantum to Cosmos: Ideas and Applications", Research summer school, Istanbul, Turkey
- Spring 2019, Guest Lecturer, Artificial Intelligence for TESS Applications, 12.S680, MIT, Cambridge, MA, US
- Spring 2019, Guest Lecturer, Undergraduate Cosmology, Astro 130, Harvard University, Cambridge, MA, US
- Fall 2016, Teaching Fellow, Graduate Cosmology, Physics 212, Harvard University, Cambridge, MA, US
- Spring 2015, Teaching Fellow, The Energetic Universe, SPU 19, Harvard University, Cambridge, MA, US
- Spring 2013, Fall 2012, Spring 2012, Teaching Assistant, Modern Physics, PHYS207, METU, Ankara, Turkey

Select Invited Talks, Seminars, and Colloquia

- *The Roman survey for strong gravitational lenses amenable to millilensing characterization*, **University of Kansas Physics Colloquium, Lawrence, KS**, March 24, 2025
- *The Roman View of Strong Gravitational Lenses*, **University of Illinois Urbana Champaign Astronomy Colloquium, Urbana-Champaign, IL**, February 4, 2025
- *The Roman View of Strong Gravitational Lenses*, **AAS245 Roman Special Session**, National Harbor, MD, January, 14, 2025
- *Planet-Induced Stellar Flares from the TESS Mission*, **Penn State University Center for Exoplanets and Habitable Worlds Seminar, State College, PA**, November 11, 2024
- *Planet-Induced Stellar Flares from the TESS Mission*, **Missouri State University Physics Colloquium, Springfield, MO**, October 24, 2024
- *Probing dark matter using LSST strong lenses*, **LSST Discovery Alliance Symposium, Northwestern University, Evanston, IL**, October 21, 2024
- *The AXIS Perspective on Atmospheric Escape from Exoplanets*, **AXIS Science Talk Series**, Remote meeting, October 13, 2023
- *The Universe is teeming with planets, but where does the Earth stand among them?*, **Astronomy Festival, St. Louis, MO**, September 30, 2023
- *SLSC Status Report*, **Rubin Observatory PCW 2023, Tucson, AZ**, August 09, 2023
- *A multi-wavelength survey of space weather beyond the Solar System*, **ULTRASAT Collaboration Meeting, Rehovot, Israel**, In-person meeting, presenting remotely, July 12, 2023
- *The legacy of TESS: a census of transiting exoplanets in our galactic neighborhood*, **Istanbul University Astrophysics Seminar, Istanbul, Turkey**, May 12, 2023
- *Exoplanetology with allesfitter in the next decade*, **NASA/GSFC EMAC Workshop**, Remote meeting, February 9, 2023
- *Mining faint targets in the TESS Full Frame Images for transiting exoplanets*, **Carnegie Institution of Science Earth and Planetary Laboratory (EPL) Astronomy Seminar**, Remote meeting, December 03, 2021
- *Exoplanets Transiting Faint Stars in the TESS Full Frame Images*, **Amateur Astronomers Association of Princeton (AAAP) Meeting**, Remote meeting, October 12, 2021
- *A Compute-Intensive Exploration and Characterization of Our Celestial Wonders: Dark Matter and Exoplanets*, **Washington University, St. Louis, MO**, Remote meeting, April 27, 2021
- *Discovery of the HD 108236 multiplanetary system with a bright Sun-like star*, **Ohio State University, Columbus, OH**, Remote meeting, January 26, 2021

- *Taking a census of dark matter substructure via transdimensional gravitational imaging*, **Stanford University, Stanford, CA**, Remote meeting, December 15, 2020
- *Recharacterization of the atmosphere of WASP-121b*, **University of Florida, Gainesville, FL**, Remote meeting, April 09, 2020
- *Detection and characterization of worlds beyond our Solar System with TESS*, **Museum of Science, Cambridge, MA**, February 21, 2020
- *Hot Jupiters and the TESS phase curve of WASP-121b*, **Yale University, New Haven CT**, November 19, 2019
- *TESS phase curve of WASP-121b*, **University of Arizona, Tucson, AZ**, October 30, 2019
- *Hunting for exoplanets with TESS*, **Sabancı University, İstanbul, Turkey**, 17 April 2019
- *A transdimensional perspective on dark matter*, **Weekly Physics Seminar, METU, Ankara, Turkey**, 16 April 2019
- Hunting for exoplanets with TESS, **Astronomy Seminar, Ankara University, Ankara, Turkey**, April 15, 2019
- *Probing the small-scale structure in strong lenses with PCAT*, **JPL, Pasadena, CA**, March 04, 2019
- Probing the Small-scale Structure in Strongly Lensed Systems via Transdimensional Inference, **Pheno and vino seminar, Princeton University, Princeton, NJ**, April 24, 2018
- *Probing the small-scale structure in strong lenses with PCAT*, **ITC Seminar, Harvard, Cambridge MA**, April 12, 2018
- *Probing the small-scale structure in strong lenses with PCAT*, **Particle Physics Seminar, MIT, Cambridge MA**, September 28, 2018
- *Inner Milky Way Gamma Ray Excess*, **Cape Cod Astronomical Society Meeting, South Yarmouth MA**, January 05, 2017

Select Software Developed

- **Probabilistic Cataloger (PCAT)**, Daylan et al. 2017, Daylan et al. 2018, a transdimensional, hierarchical, and Bayesian framework to sample from the posterior probability distribution of a metamodel, i.e., the union of models with different dimensionality,
<https://github.com/tansudaylan/pcat>
- **Allesfitter**, Günther & Daylan, 2019, widely used software to model exoplanets and stars in time-series data,
<https://www.allesfitter.com>

Technical experience

- High-performance computing, data analysis, machine learning, and Bayesian inference using astronomical data collected by space and ground-based missions such as Fermi-LAT, Chandra, JWST, HST, SDSS, TESS, Kepler, and AMS-02.
- Observing with DECam on the 4m Blanco Telescope at CTIO and PFS on the 6.5m Clay (Magellan II) Telescope at LCO.

Select Science Outreach

- Over 50 invited talks and interviews on science outreach platforms on the web with over 2,000,000 views
- Lecturer, The Project Science Voyagers, 2016-2018, reached ~30,000 high school students
- Lecturer, Turkish Ministry of Education e-conference series, 2018, reached ~9,000 high school students)
- Contributor, Cambridge Explores the Universe, CfA, Cambridge, April 2016
- Contributor, Ask a Scientist, Sky & Space Day, Cambridge Science Festival, Cambridge, April 2015-2016
- Lecturer, Beacon Hill Seminars, Science In The News Public Science Lectures, Cambridge, MA, (2014-2016)
- Author, Harvard Science In The News, 2014
- Lecturer, "There is a Scientist In My Classroom" Project, Cambridge, MA, 2013
- Organizer, Mobile CERN exhibition, METU, Ankara, Turkey, 2012