

# 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](mailto:tansu@wustl.edu),  
<https://www.tansudaylan.com>  
<https://sites.wustl.edu/astromusers/>  
**Last updated January 2026**

## 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 to exoplanet and cosmology research. My research footprint ( $\geq 100$  peer-reviewed papers,  $\geq 7,800$  citations and an h-index of  $\geq 46$ ) can be accessed via [Google Scholar](#). My Ph.D. thesis, A Transdimensional Perspective on Dark Matter (2018), was advised by Douglas P. Finkbeiner. My postdoc advisors were Sara Seager (MIT), George Ricker (MIT), and Joshua Winn (Princeton).

## 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, Research Corporation for Science Advancement (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 10<sup>th</sup> 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**, 2023-2026, 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

- \$78,725, **Origins, Compositions, and Atmospheres of Sub-Neptune Exoplanets**, 2024, XRP24, PI: Cross-field
- \$492,467 **Planet Formation Revealed by a Uniform Analysis of all Giant Planets**, 2021, NASA XRP, 21-XRP21-0135, PI: Quinn
- \$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.
- \$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 publications

144. Daylan, **The legacy of TESS: a census of transiting exoplanets in our galactic neighborhood**  
TJAA, 4:79-82, 2023, doi:10.55064/tjaa.1203862
143. 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, arXiv:2004.11314
142. Daylan et al., **TESS observations of the WASP-121 b phase curve**  
AJ, 161:131, March 2021, doi:10.3847/1538-3881/abd8d2, arXiv:1909.03000
141. 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, arXiv:1706.06111
140. 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, arXiv:1607.04637
139. 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, arXiv:1402.6703

### First-author, non-peer-reviewed publications

138. 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

### Second-author, peer-reviewed publications

137. Lin & Daylan, **The Persistent Thermal Anomalies in Rocky Worlds**  
Submitted, arXiv:2601.00412
136. Ahmed, Daylan, et al. **TESS discovery of a high-density brown dwarf candidate transiting TOI-2155**  
Submitted, arXiv:2509.18503
135. Whitsett & Daylan, **Planet-induced stellar flare candidates from the TESS mission**  
Submitted, arXiv:2509.22918
134. Esmer & Daylan, **Eclipse Timing Variations of Circumbinary Substellar Objects in TESS Data**  
AJ, 170:322, November 2025 doi:10.3847/1538-3881/ae0f9e, arXiv:2503.20900
133. Cappiello & Daylan, **Can a Dark Inferno Melt Earth's Core?**  
Phys. Rev. D 112, 075018, October 2025, doi:10.1103/qh3r-bhv8, arXiv:2505.24070
132. Kaya & Daylan, **Radio prospects of extrasolar aurorae polaris as a probe of planetary magnetism**  
ApJ, 988:203, August 2025, doi:10.3847/1538-4357/adde5c, arXiv:2506.04604
131. Wedig, Daylan, et al., **The Roman View of Strong Gravitational Lenses**  
ApJ, 986:42, June 2025, doi:10.3847/1538-4357/adc24f, arXiv:2506.03390
130. 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
129. 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

128. 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

**Non-first/second-author, peer-reviewed publications**

127. Brande et al., **Carbon dioxide and evidence for water in a stripped Hot Jupiter** Submitted,
126. Kane et al., **Imaging Venus-like Worlds: Spectral, Polarimetric, and UV Diagnostics for the Habitable Worlds Observatory** Accepted,
125. Yıldız et al., **Planetary systems in the light of asteroseismology: metallicity threshold for the planetary systems and the age-metallicity relation** Submitted,
124. Quinn et al., **TOI-2494 c and TOI-5143 c: a hot Saturn and a hot Jupiter with interior planetary companions** Submitted,
123. Anderson et al., **NGTS-11 c: a transiting Neptune-mass planet interior to the warm Saturn NGTS-11 b** Submitted, arXiv:2510.14083
122. Scott et al., **Two temperate Earth- and Neptune-sized planets orbiting nearby fully convective M dwarfs** Accepted,
121. Ashtari et al., **Heat Reveals What Clouds Conceal: Global Carbon & Longitudinally Asymmetric Chemistry on LTT 9779 b** Accepted, arXiv:2510.04863
120. Bieryla et al., **TOI-6692b: An eccentric 130-day period giant planet with a single transit from TESS** Accepted, arXiv:2601.16357
119. Wu et al., **Detection of four cold Jupiters through combined analyses of radial velocity and astrometry data** Accepted, arXiv:2601.11280
118. Greklek-McKeon et al., **Confirmation of a Third Earth-sized Planet in the TOI-2267 Binary System** Accepted, arXiv:2512.10007
117. Sorabella et al., **An Anomalous Symmetric Flare Observed in the Single-lined Spectroscopic Binary TIC 380907942: Assessing Self-lensing and Alternative Hypotheses** ApJ, 997:3, January 2026, doi:10.3847/1538-4357/ae25f8
116. Sagynbayeva et al., **Optimizing Habitable Worlds Observatory's Orbital Characterization of Cold Giants and Habitable Worlds** AJ, 170:208, October 2025, doi:10.3847/1538-3881/adf84d, arXiv:2507.21443
115. Kunimoto et al., **LEO-Vetter: Fully Automated Flux- and Pixel-level Vetting of TESS Planet Candidates to Support Occurrence Rates** AJ, 170:280, November 2025, doi:10.3847/1538-3881/ae070a, arXiv:2509.10619
114. Kahle et al., **The SPACE Program I: The featureless spectrum of HD 86226 c challenges sub-Neptune atmosphere trends**

A&A, 701, id.A184, September 2025, doi:10.1051/0004-6361/202554916, arXiv:2507.13439

113. Kroft et al., **A Pair of Dynamically Interacting Sub-Neptunes Around TOI-6054**  
AJ, 170:150, September 2025 doi:10.3847/1538-3881/adee24, arXiv:2501.09095
112. Jenkins et al., **An Eccentric Sub-Neptune Moving Into the Evaporation Desert**  
ApJL, 820, id.L20, August 2025 doi:10.3847/2041-8213/adea46, arXiv:2505.10324
111. Frensch et al., **Three non-inflated Hot Jupiters transiting K-dwarfs with a significant heavy element mass**  
A&A, 700, id.A118, August 2025, doi:10.1051/0004-6361/202553879, arXiv:2506.04923
110. Chandler et al., **NSF-DOE Vera C. Rubin Observatory Observations of Interstellar Comet 3I/ATLAS (C/2025 N1)**  
Submitted, July 2025, arXiv:2507.13409
109. Blunt et al., **Statistical Capability of the Habitable Worlds Observatory for Constraining Ozone Onset Time in Earth Analogs**  
JATIS, 11:4, 042214 August 2025, doi:10.1117/1.JATIS.11.4.042214, arXiv:2507.06188
108. 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
107. Shajib et al., **Strong gravitational lenses from the Vera C. Rubin Observatory**  
Philosophical Transactions A, Volume 383, Issue 2295, id.20240117, May 2025, doi:10.1098/rsta.2024.0117, arXiv:2406.08919
106. Crossfield et al., **OrCAS: Origins, Compositions, and Atmospheres of Sub-neptunes. I. Survey Definition**  
AJ, 169:89, February 2025 doi:10.3847/1538-3881/ad9aa6, arXiv:2411.16836
105. Kunimoto et al., **TOI-6276: Two Earth-size Planets and an Earth-size Candidate Transiting the Nearby Star HD 101581**  
AJ, 169:47, January 2025 doi:10.3847/1538-3881/ad9266, arXiv:2412.08863
104. 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
103. 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
102. 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
101. 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
100. 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
99. 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

98. 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
97. 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
96. 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
95. 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
94. 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
93. 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
92. 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
91. 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
90. Feder 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, arXiv:2307.10385
89. 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
88. 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
87. 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
86. 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
85. 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
84. 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
83. 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

82. Tsai et al., **Photochemically produced SO<sub>2</sub> in the atmosphere of WASP-39b**  
Nature, 617:483-487, May 2023, doi:10.1038/s41586-023-05902-2 arXiv:2211.10490
81. 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
80. 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
79. 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
78. 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
77. 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
76. 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 arXiv:2211.10488
75. 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 arXiv:2211.10487
74. Ahrer et al., **Early Release Science of the exoplanet WASP-39b with JWST NIRCam**  
Nature, 614:653-658, February 2023, doi:10.1038/s41586-022-05590-4 arXiv:2211.10489
73. JTEC ERS Team, **Identification of carbon dioxide in an exoplanet atmosphere**  
Nature, 614:649-652, February 2023, doi:10.1038/s41586-022-05269-w arXiv:2208.11692
72. 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 arXiv:2206.11909
71. 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 arXiv:2209.02831
70. 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 arXiv:2206.06254
69. Butler et al., **Measurement of the Relativistic Sunyaev-Zeldovich Corrections in RX J1347.5-1145**  
ApJ, 932:55, June 2022, doi:10.3847/1538-4357/ac6c04 arXiv:2110.13932
68. 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 arXiv:2204.11975
67. 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 arXiv:2008.11681
66. 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 arXiv:2110.12079
65. 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 arXiv:2204.13573
64. Kaye et al., **Transit timings variations in the three-planet system: TOI-270**  
MNRAS 510:5464-5485, March 2022, doi:10.1093/mnras/stab3483
63. 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 arXiv:2202.01240
62. 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 arXiv:2110.08597
61. 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 arXiv:2108.09109
60. 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 arXiv:2202.09884
59. 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
58. 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
57. 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
56. Wells et al., **A large sub-Neptune transiting the thick-disk M4V TOI-2406**  
A&A, 653, A97, September 2021, doi:10.1051/0004-6361/202141277, arXiv:2107.14125
55. Burt et al., **TOI-1231 b: A Temperate, Neptune-Sized Planet Transiting the Nearby M3 Dwarf NLTT 24399**  
AJ, 162:87, September 2021, doi:10.3847/1538-3881/ac0432, arXiv:2105.08077
54. Krishnamurthy et al., **Transit Search for Exoplanets around Alpha Centauri A and B with ASTERIA**  
AJ, 161:275, June 2021, doi:10.3847/1538-3881/abf2c0
53. Guerrero et al., **The TESS Objects of Interest Catalog from the TESS Prime Mission**  
ApJS 254:39, June 2021, doi:10.3847/1538-4365/abefe1, arXiv:2103.12538
52. Hobson et al., **A transiting warm giant planet around the young active star TOI-201**  
AJ, 161:235, May 2021, doi:10.3847/1538-3881/abeaa1, arXiv:2103.02685
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50. Powell et al., **TIC 168789840: A Sextuply-Eclipsing Sextuple Star System**  
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47. Fausnaugh et al., **Early-time Light Curves of Type Ia Supernovae Observed with TESS**  
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45. Dreizler et al., **The CARMENES search for exoplanets around M dwarfs – LP 714-47b (TOI 442.01): Populating the Neptune desert**  
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34. Kane et al., **Transits of Known Planets Orbiting a Naked-Eye Star**  
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30. Dalba et al., **The TESS-Keck Survey. I. A Warm Sub-Saturn-mass Planet and a Caution about Stray Light in TESS Cameras**  
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27. Günther et al., **Stellar Flares from the First TESS Data Release: Exploring a New Sample of M-dwarfs**  
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- Non-first/second-author, non-peer-reviewed publications**
17. Koss et al., **The Advanced X-ray Imaging Satellite Community Science Book**  
October 2025, arXiv:[2511.00253](https://arxiv.org/abs/2511.00253)
  16. Corrales et al., **The life cycle of stars and their planets from the high energy perspective**  
AXIS Probe Concept Mission White Paper, November 2023, arXiv:[2311.07674](https://arxiv.org/abs/2311.07674)
  15. Street et al., **Maximizing science return by coordinating the survey strategies of Roman with Rubin, and other major facilities**  
Roman Core Community Survey White Paper, June 2023, arXiv:[2306.13792](https://arxiv.org/abs/2306.13792)
  14. Han et al., **NANCY: Next-generation All-sky Near-infrared Community surveyY**  
Roman Core Community Survey White Paper, June 2023, arXiv:[2306.11784](https://arxiv.org/abs/2306.11784)
  13. Collett et al., **The 4MOST Strong Lensing Spectroscopic Legacy Survey (4SLSLS)**  
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  12. Kunimoto et al., **False Alarms Revealed in a Planet Search of TESS Light Curves**  
RNAAS, 7:7, January 2023, doi:[10.3847/2515-5172/acb149](https://doi.org/10.3847/2515-5172/acb149) arXiv:[2301.01900](https://arxiv.org/abs/2301.01900)
  11. Adhikari et al., **Report of the Topical Group on Cosmic Probes of Fundamental Physics for Snowmass 2021**  
Snowmass 2021 Report, September 2022, arXiv:[2209.11726](https://arxiv.org/abs/2209.11726)
  10. Engel et al., **The Future of Gamma-Ray Experiments in the MeV-EeV Range**  
Snowmass 2021 white paper, March 2022, arXiv:[2203.07360](https://arxiv.org/abs/2203.07360)
  9. Mao et al., **Snowmass2021: Vera C. Rubin Observatory as a Flagship Dark Matter Experiment**  
Snowmass 2021 white paper, March 2022, arXiv:[2203.07252](https://arxiv.org/abs/2203.07252)
  8. Leane et al., **Snowmass2021 Cosmic Frontier White Paper: Puzzling Excesses in Dark Matter Searches and How to Resolve Them**  
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  7. Guy et al., **Rubin-Euclid Derived Data Products: Initial Recommendations**  
Rubin-Euclid Derived Data Products Working Group Report, January 2022, arXiv:[2201.03862](https://arxiv.org/abs/2201.03862)
  6. S. Schael et al., **Precision measurements of the electron spectrum and the positron spectrum with AMS**  
ICRC 2013, Rio de Janeiro, Brazil, 2013
  5. J. Casaus et al., **Determination of the positron anisotropy with AMS**  
ICRC 2013, Rio de Janeiro, Brazil, 2013
  4. V. Choutko et al., **Precision Measurement of the Cosmic Ray Helium Flux with AMS Experiment**  
ICRC 2013, Rio de Janeiro, Brazil, 2013
  3. S. Haino et al., **Precision measurement of the proton flux with AMS**  
ICRC 2013, Rio de Janeiro, Brazil, 2013

2. A. Oliva et al., **Precision Measurement of the Cosmic Ray Boron-to-Carbon Ratio with AMS**  
ICRC 2013, Rio de Janeiro, Brazil, 2013
1. B. Bertucci et al., **Precision measurement of the  $e^+ + e^-$  spectrum with AMS**  
ICRC 2013, Rio de Janeiro, Brazil, 2013

## Select Invited Seminars and Colloquia

- *Roman Strong Lensing WFS Status Report*, **Roman Science Quarterly**, Caltech/IPAC, Pasadena, CA, December 11, 2025
- *Probes of Dark Matter from the Galactic Center to the Earths Core*, **Colloquium**, Department of Physics and Astronomy, University of Oklahoma, Norman, OK, November 21, 2025
- *Strong Lensing with Roman and other large datasets in astronomy*, **Mexican Astro Cosmo Statistics School (MACSS)**, University of Guanajuato, León, Guanajuato, Mexico, October 1-2, 2025
- *The Roman View of Strong Gravitational Lenses*, **Cosmic Cartography with Roman: Advances in Galaxy Structures, Distributions, Dark Matter, and Dark Energy**, STScI, Baltimore, MD, July 15, 2025
- *The Roman survey for strong gravitational lenses amenable to millilensing characterization*, **Colloquium**, Department of Physics and Astronomy, University of Kansas, Lawrence, KS, March 24, 2025
- *The Roman View of Strong Gravitational Lenses*, **Colloquium**, Department of Astronomy, University of Illinois Urbana-Champaign, 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 (AAP) 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 Contributed Presentations

- *Can a Dark Inferno Melt Earth's Core?*, **Rocky Worlds 4, Groningen, The Netherlands**, January 2026
- *Thermal Evolution of Planetary Cores Heated by Dark Matter Annihilation*, **AAS247, Phoenix, AZ**, January, 2026
- *The ExoCup*, **AAPT Winter Meeting, St. Louis, MO**, January 19, 2025
- *The search for induced stellar flares using TESS*, **Exoplanets 5, The Netherlands**, June 2024

### Select Service and other 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
- Member of the Roman Science User Panel (RSUP)
- 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 Sarıcaoğlu (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)

Mentorship:

- Transdisciplinary Mentoring Community (TMC) Mentor, Arts and Sciences at WashU (2024-2025 AY)
- AAS Division of Dynamical Astronomy (DDA) Mentor
- CIMER mentor certification, WashU, October 27, 2023
- 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)

## Teaching

- Galactic Astrophysics, Washington University: Spring 2026. Next in Spring 2028.
- Astrostatistics (Physics 4680/5680), Washington University: Spring 2025. Next in Spring 2027.
- Gateway Expeditions into Exoplanets (Physics 1210), Washington University: Fall 2024. Next in Spring 2027.
- Planets and Life in the Universe (Physics 3330/5330), Washington University: Fall 2023, Fall 2025. Next in Fall 2027.
- Research Seminar (Physics 5820), Washington University: Fall 2022, 2023, 2024.
- 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 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>

### 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