

# STEPHEN P. SCHMIDT

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## EDUCATION

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**Johns Hopkins University**

Expected 2027

Ph.D. Astronomy and Astrophysics

*Doctoral Advisors: Kevin Schlaufman & David Sing*

**Johns Hopkins University**

May 2024

M.A. Physics

**University of North Carolina at Chapel Hill**

August 2018 - May 2022

B.S. With Honors & Highest Distinction in Physics and Mathematics; 3.954 GPA

## PUBLICATIONS (20; h-index = 9, >300 Citations)

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### First Author

7. McCreery, P<sup>1</sup>. & **Schmidt, S. P.**<sup>1</sup> et al. A Convective Core and Radiative Envelope Rule Out Favored Tidal Dissipation Models in the WASP-12 System  
Under Review at ApJ
6. **Schmidt, S. P.**, May, E. M., Lothringer, J. D., et al. Mitigating Charge Migration in JWST NIRISS Reveals That KELT-7 b is a Metal-enriched Ultra-hot Jupiter Orbiting a Young Metal-rich Star  
Under Review at AJ; Preprint available at <https://arxiv.org/abs/2607.06708>
5. **Schmidt, S. P.**, Thorngren, D. P., & Schlaufman, K. C. Hot Jupiters are Inflated Primarily by Shallow Heating  
<https://doi.org/10.3847/1538-4357/ae4c5e>
4. **Schmidt, S. P.** & Schlaufman, K. C. Most Hot Jupiters Were Cool Giant Planets for More Than 1 Gyr  
<https://doi.org/10.3847/1538-3881/ae3c11>
3. **Schmidt, S. P.**, MacDonald, R. J., Tsai, S.-M. et al. A Comprehensive Reanalysis of K2-18 b's JWST NIRISS+NIRSpec Transmission Spectrum  
<https://doi.org/10.3847/1538-3881/ae019a>
2. **Schmidt, S. P.**, Schlaufman, K. C., & Hamer, J. H. Resonant and Ultra-short-period Planet Systems are at Opposite Ends of the Exoplanet Age Distribution  
<https://doi.org/10.3847/1538-3881/ad5d76>
1. **Schmidt, S. P.**, Schlaufman, K. C., Ding, K., et al. Verification of Gaia Data Release 3 Single-lined Spectroscopic Binary Solutions with Three Transiting Low-mass Secondaries  
<https://doi.org/10.3847/1538-3881/ad0135>

### Second/Third Author

3. Wang, L.-C., Mukherjee, S., **Schmidt, S. P.**, et al. Asymmetric Aerosol Distribution on the Terminators of the Warm Saturn WASP-69 b Revealed by JWST NIRISS/SOSS  
Under Review at ApJL; Preprint available at <https://arxiv.org/abs/2608.19756>
2. Ashtari, R., **Schmidt, S. P.**, Fu, G., et al. A Clearer View of HAT-P-1 b: JWST NIRSpec G395H Reveals a Cloud-free Atmosphere of Water, Carbon Dioxide, and Possibly Hydrogen Sulfide  
Accepted to AJ; <https://arxiv.org/abs/2608.28538>

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<sup>1</sup>Jointly First Authors

1. Mann, A. W., Wood, M. L., **Schmidt, S. P.**, et al. TESS Hunt for Young and Maturing Exoplanets (THYME) VI: an 11 Myr giant planet transiting a very low-mass star in Lower Centaurus Crux  
<https://doi.org/10.3847/1538-3881/ac511d>

## Major Contributions

2. Mukherjee, S., Sing, D. K., Fu, G., et al. including **Schmidt, S. P.** Cloudy mornings and clear evenings on a gas giant exoplanet  
<https://doi.org/10.1126/science.adx5903>
1. Wang, G., Balmer, W. O., Pueyo, L., et al. including **Schmidt, S. P.** A Revised Density Estimate for the Largest Planet, HAT-P-67 b  
<https://doi.org/10.3847/1538-3881/adcec9>

## Contributing Author

8. Bennett, K. A., Wiser, L. S., Mak, M. T., et al. including **Schmidt, S. P.** A JWST NIRISS/SOSS Transmission Spectrum of the Exo-Neptune HAT-P-11 b Reveals Aerosols and a High Metallicity In Agreement with the Mass-Metallicity Trend  
Under review at AJ
7. Rustamkulov, Z., Schlaufman, K. C., Sing, D. K., et al. including **Schmidt, S. P.** The Transit Age: Precise Exoplanet System Ages in the Era of *Gaia* and *JWST*  
Under review at AJ
6. Sing, D. K., Lothringer, J. D., Valenti, J. A., et al. including **Schmidt, S. P.** A JWST Transiting Survey of FGK Stellar Limb darkening: Empirical Evidence for Quadratic Laws and Atmospheric Model Comparisons  
Accepted to AJ; <https://arxiv.org/abs/2609.00263>
5. Fu, G., Mukherjee, S., Stevenson, K. B., et al. including **Schmidt, S. P.** Overcast mornings and clear evenings in hot Jupiter exoplanet atmospheres  
<https://doi.org/10.3847/2041-8213/adf20f>
4. Crumpler, N. R., Chandra, V., Zakamska, N. L., et al. including **Schmidt, S. P.** A Large Catalog of DA White Dwarf Characteristics using SDSS and Gaia Observations  
<https://doi.org/10.3847/1538-4357/ade9a9>
3. Crumpler, N. R., Chandra, V., Zakamska, N. L., et al. including **Schmidt, S. P.** Detection of the Temperature Dependence of the White Dwarf Mass-Radius Relation with Gravitational Redshifts  
<https://doi.org/10.3847/1538-4357/ad8ddc>
2. Wood, M. L., Mann, A. W., Barber, M. G., et al. including **Schmidt, S. P.** A Lithium Depletion Age for the Carina Association  
<https://doi.org/10.3847/1538-3881/ad03f3>
1. Wood, M. L., Mann, A. W., Barber, M. G., et al. including **Schmidt, S. P.** TESS Hunt for Young and Maturing Exoplanets (THYME) IX: a 27 Myr extended population of Lower-Centaurus Crux with a transiting two-planet system  
<https://doi.org/10.3847/1538-3881/aca8fc>

## PRESENTATIONS

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### Colloquia, Seminars, & Invited Talks

- Harvard | Smithsonian CfA Exoplanet Pizza Lunch, October 27, 2026. *Time-resolving Hot Jupiter Formation with Population-level Stellar Age Inferences*
- MIT Monday Afternoon Talk, October 26, 2026. *ibid.*

- Caltech Planetary Science Seminar, October 20, 2026. *Exoplanet System Age as a New Dimension of Giant Planet Formation, Structure, and Evolution*
- Carnegie Earth & Planets Laboratory Astronomy Seminar, September 18, 2026. *ibid.*
- University of Maryland Planetary Astronomy Lunchtime Series, September 14, 2026. *ibid.*
- University of California, Santa Cruz Planetary Lunch, August 31, 2026. *ibid.*
- NASA Goddard Space Flight Center Exoplanet Seminar, August 4, 2026. *ibid.*
- Princeton University Extrasolar Planets Discussion Group, April 6, 2026. *ibid.*
- Johns Hopkins University CAS Wine & Cheese Seminar, February 9, 2026. *Hot Jupiters are Inflated Primarily by Shallow Heating*
- Pennsylvania State University CEHW Seminar, February 2, 2026. *Exoplanet System Age as a New Dimension of Giant Planet Formation, Structure, and Evolution*
- STScI HotSci, July 30, 2025. *K2-18 b is (Probably) Not a Hycean Biosphere*
- STScI ESPF Science Hour, March 4, 2025. *“A Comprehensive Reanalysis of K2-18 b’s JWST NIRISS + NIRSpec Transmission Spectrum”*

### Contributed Conference Talks

- Exoplanets VI, Porto, Portugal, June 29, 2026. *A Clear View of Star-planet Interactions in Three Ultra-hot Jupiter Systems Using JWST*
- JHU-STScI ExoJamboree #2, Baltimore, Maryland, November 21, 2025. *Most hot jupiters were cool giant planets for more than 1 Gyr*
- OHP 2025–51 Pegasi b: Cool Giant Planets And Their Systems, L’Observatoire de Haute-Provence, France, October 6-10, 2025. *Most Hot Jupiters Were Cool Giant Planets for > 1 Gyr*
- The Solar System in Context, Tucson, Arizona, September 29-October 2, 2025. *Most Hot Jupiters Were Cool Giant Planets for Over a Gyr*
- Know Thy Star, Know Thy Planet II, Pasadena, California, February 2-7 2025. *Time-resolving Hot Jupiter System Evolution with Population-level Stellar Age Inferences*
- Exoplanets V, Leiden, The Netherlands, June 16-21 2024. *The Dynamical Evolution of Exoplanet Systems over Billions of Years*
- Chesapeake Bay Area Exoplanet Meeting #11, Baltimore, Maryland, USA, May 17 2024. *Resonant and Ultra-short-period Planets are at Opposite Ends of the Exoplanet Age Distribution*
- Extreme Solar Systems V, Christchurch, New Zealand, March 20, 2024. *The Extremes of the Exoplanet Age Distribution*

### Conference Posters

- Exoplanets VI, Porto, Portugal, June 29-July 3, 2026. *Hot Jupiters are Inflated Primarily by Shallow Heating*
- ExoClimates VII, Montreal, Canada, July 7-11 2025. *A Comprehensive Reanalysis of K2-18 b’s JWST NIRISS + NIRSpec Transmission Spectrum*
- Know Thy Star, Know Thy Planet II, Pasadena, California, February 2-7 2025. *Delayed Cooling in the Hot Jupiter Population Points to Shallow Interior Heating*
- Exoplanets V, Leiden, The Netherlands, June 16-21 2024. *Improving M Dwarf Exoplanet Hosts’ Masses and Radii Through the Combination of Gaia and TESS*
- AAS 243, New Orleans, Louisiana, January 7-11 2024. *Resonant and Ultra-short-period Planet Systems are at Opposite Extremes of the Exoplanet Age Distribution*
- NC Space Symposium, virtual, April 8 2022. *Estimating M Dwarf Metallicities with Wide Binaries and Gaia EDR3 Data*
- AAS 236, virtual, June 1-3 2020. *Improved Methods for Ground-Based Follow-Up of Young Stars and Planets from the ZEIT Survey*

## Other Presentations

- JHU AstroCoffee, March 12, 2026. *“Hot Jupiters are Inflated Primarily By Shallow Heating”*
- JHU AstroCoffee, February 16 2026. *“Most Hot Jupiters Were Cool Giant Planets For More Than 1 Gyr”*
- Planetary Science Institute, Short Period Planet Group Meeting, January 28, 2026.
- JHU AstroCoffee, February 17 2025. *“A Comprehensive Reanalysis of K2-18 b’s JWST NIRISS + NIRSpec Transmission Spectrum”*
- Planetary Science Institute, Short Period Planet Group Meeting, October 2, 2024.
- JHU AstroCoffee, September 9, 2024. *“Resonant and Ultra-short-period Planets are at Opposite Ends of the Exoplanet Age Distribution”*
- JHU AstroCoffee, December 11 2023. *“Verification of Gaia DR3 Single-lined Spectroscopic Binary Solutions With Three Transiting Low-mass Secondaries”*

## Public Talks

- Astronomy on Tap Baltimore, October 28 2025, *Your Favorite Exoplanet Doesn’t Have Aliens*
- Astronomy on Tap in the Triangle, April 5 2022, *The Recipe for Another Earth*

## HONORS, AWARDS AND FELLOWSHIPS

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|-------------------------------------------------------------------------------------------|-----------|
| National Science Foundation Graduate Research Fellowship, 2024-2027                       | \$159,000 |
| MD Space Grant Consortium Observatory Fellowship, 2023-2024                               | \$64,730  |
| NC Space Grant Undergraduate Research Scholarship, 2021-2022                              | \$8,000   |
| Project Title: Using Wide Binaries and Gaia Data to Generate a Fit for M Dwarf Parameters |           |
| AAS International Travel Award, 2026; <i>Exoplanets VI</i>                                | \$1,100   |
| JHU Physics & Astronomy EJ Rhee Travel Award, 2026                                        | \$1,500   |
| UNC-CH Department of Physics and Astronomy Undergraduate Excellence Award, 2022           |           |
| Sigma Xi, inducted spring 2026                                                            |           |
| Phi Beta Kappa, inducted spring 2021                                                      |           |
| Eagle Scout Rank, Boy Scouts of America                                                   |           |

## SUCCESSFUL PROPOSALS

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### Co-I

- **JWST Cycle 5.** “Parting the Clouds: An optimized limb-limb exoplanet survey to reveal diurnal cloud cycling and the mass-metallicity relation” (PI: D. K. Sing)
- **JWST Cycle 5.** “Mistaken Identity? Resolving Ultra-hot Jupiter NUV Absorption to Measure Refractory-to-Volatile Ratios” (PI: J. Lothringer)
- **JWST Cycle 5.** “Comparative Planetology in Kepler-89: Mass-Loss, Disk Gaps, and Super-Puffs” (PI: J. Lothringer)
- **NOIRLab/WIYN 2026A.** “A Measurement of Primordial Stellar Obliquity in a Solar System-analog Coplanar, Wide-separation Multiple Giant Planet System” (PI: K. C. Schlaufman)
- **NASA/Keck 2025A.** “A Measurement of Primordial Stellar Obliquity in a Wide-separation Giant Planet System” (PI: K. C. Schlaufman)
- **NOIRLab/WIYN 2025A.** “A Measurement of Primordial Stellar Obliquity in a Wide-separation Giant Planet System” (PI: K. C. Schlaufman)

## MENTORING EXPERIENCE

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### Mentored Students

- **Lucy Fang**, JHU Undergraduate, with Prof. Kevin Schlaufman 2025-  
Project title: “*Using N-body simulations with tidal theory to test whether nearby perturbers can form ultra-short-period planets over billions of years*”

## MEDIA COVERAGE AND PUBLICITY

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Quoted in The New York Times: Astronomers Detect a Possible Signature of Life on a Distant Planet

Quoted in Nature Magazine: Signs of life on a distant planet? Not so fast, say these astronomers

Quoted in Scientific American: Why Astronomers Are Not Sold on New Alien Life Claims

Quoted in PTI (Press Trust of India): New hope of extraterrestrial life? Scientists cautious about celebrating early

Paper mentioned in Ars Technica: Skepticism greets claims of a possible biosignature on a distant world

## TEACHING EXPERIENCE

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### Teaching Assistant

Fall 2022

*AS.171.103: General Physics I for Biological Science Majors*

Taught one weekly problem-solving session, held one weekly hour-long office hour, proctored exams, and graded homework for over 250 students. Topics included kinematics, forces and motion, conservation laws, circular motion, and gravitation, and fluids.

### Teaching Assistant

Fall 2022

*AS.173.111: General Physics Laboratory I*

Taught one weekly section of a 3-hour introductory physics lab, facilitating and grading students' lab work, and attending a weekly preparatory meeting. Topics included data analysis with Excel, measurement and uncertainty, and general physics principles such as linear momentum, moment of inertia, and the small angle approximation.

### Learning Assistant

Spring 2019 - Spring 2022

*One section of PHYS 118, Introductory Calculus-based Mechanics and Relativity; two sections of PHYS 114, General Physics I: For Students of the Life Sciences; two sections of PHYS 115, General Physics II: For Students of the Life Sciences; and one section of MATH 383: First Course in Differential Equations*

Physics: Assisted Teaching Assistant during class, facilitated students' lab work, held weekly office hours, and attended a weekly preparatory meeting;

Mathematics: Assisted Professor during class, facilitated problem-solving portions of class, and held weekly office hours.

- Topics taught: kinematics, forces and motion, conservation laws, circular motion, gravitation, special relativity, waves, fluids, algebra-based electromagnetism, geometric optics, nuclear physics, biological applications of physics, laboratory practices, error analysis, first order ODEs, second order ODEs, and systems of differential equations.

## SERVICE, LEADERSHIP, AND OUTREACH

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### Review and Referee Service

- The Astronomical Journal 2026-Present
- The Astrophysical Journal Letters 2026-Present
- The Planetary Science Journal 2025-Present

### Positions of Responsibility

- **Steward**, TRU-UE Local 197 2024-Present
- **Institutional Representative**, Astro Grad Congress 2024-Present
- **Senate Member**, JHU Gender Minorities & Women in Physics 2023-Present
- **Co-chair**, TRU-UE Local 197 Media and Communications Committee 2024-2026  
*Served 2 terms*
- **Colloquium Representative**, JHU Physics and Astronomy Graduate Students 2026
- **President**, JHU Physics and Astronomy Graduate Students 2024-2026  
*Served 2 terms*
- **Observatory Fellow**, Maryland Space Grant Consortium 2023-2024
- **Social Coordinator**, JHU Physics and Astronomy Graduate Students 2023-2024
- **Room Manager**, UNC Society of Physics Students 2021-2022
- **Treasurer**, UNC Visibility in Physics 2021-2022

### Events Organized, Co-organized, or Contributed

- **Co-organizer**, Astronomy on Tap Baltimore (20+ events) 11/2022-Present
- **Co-organizer**, JHU Physics and Astronomy Physics Fair 2026 04/2026
- **Co-organizer**, JHU Physics and Astronomy 2026 Department Open House 03/2026
- **Photographer**, GWiP@JHU × Morgan State University Spring Brunch 03/2025
- **Local Organizing Committee**, GWiP@JHU Fall Summit #3 09/2025
- **Co-organizer**, JHU Physics and Astronomy PhD Program Orientation 08/2025
- **Organizer**, JHU Physics and Astronomy Physics Fair 2025 04/2025  
*Played an instrumental role in restarting the fair after over 5 years of cancellation*
- **Photographer**, GWiP@JHU × Morgan State University Spring Brunch 04/2025
- **Organizer**, JHU Physics and Astronomy 2025 Department Open House 03/2025
- **Scientific Organizing Committee**, JHU-STScI ExoJamboree 11/2024
- **Local Organizing Committee**, GWiP@JHU Fall Summit #2 09/2024
- **Co-organizer**, JHU Physics and Astronomy PhD Program Orientation 08/2024
- **Photographer**, Chesapeake Bay Area Exoplanet Meeting #11 05/2024
- **Co-organizer**, JHU Partial Solar Eclipse Viewing Event 04/2024
- **Co-organizer**, JHU Physics and Astronomy 2024 Department Open House 03/2024

### Public Outreach

- **JHU Physics and Astronomy Graduate Students** 2022-Present  
Conducted physics demonstration visits to local high schools in the Baltimore area.
- **Maryland Space Grant Consortium Observatory Fellow** 2023-2024  
Operated the Morris W. Offit Telescope for weekly observatory open houses, liaised with local schools and community organizations to coordinate public outreach events with the Maryland Space Grant Observatory; includes collaborations with STScI's Youth for Astronomy & Engineering (YAE) program and the JHU Whiting School of Engineering's outreach programs.
- **UNC Physics Foundations Seminar** 2020-2022  
Developed, planned, and led a weekly student-led introductory physics and mathematics knowledge program to better prepare incoming undergraduates from underserved communities for core physics major classes.

## COLLABORATION MEMBERSHIPS

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|--------------------------------------------------|--------------|
| JWST Grand Tour/Parting the Clouds Collaboration | 2024-Present |
| STARGATE Collaboration                           | 2025-Present |

## TECHNICAL SKILLS & EXPERIENCE

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|----------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Programming</b>               | Python, Wolfram Mathematica, MATLAB, Cython                                                                            |
| <b>Databases</b>                 | Microsoft SQL, Gaia ADQL                                                                                               |
| <b>Observatories/Instruments</b> | JWST NIRISS, JWST NIRSpec, HST WFC3, Gaia, TESS, Kepler, Keck KPF (1 night), SOAR (13 nights)                          |
| <b>Tools</b>                     | L <sup>A</sup> T <sub>E</sub> X, Microsoft Office, SAO DS9, IRAF, Unix, Git, MESA                                      |
| <b>Python Libraries</b>          | numpy, scipy, astropy, pandas, matplotlib, lightkurve, astroquery, juliet, PICASO, POSEIDON, pyia, gala, jwst pipeline |
| <b>Languages</b>                 | English (Native)                                                                                                       |

## TRAININGS

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- UNC Safe Zone Training
- UNC HAVEN (Helping Advocates for Ending Violence Now) Training
- JHU Safe Zone Training