

STEPHEN P. SCHMIDT

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EDUCATION

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 in Physics and Mathematics; 3.954 GPA

PUBLICATIONS

First Author

- **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
Submitted to AJ; Preprint available at <https://arxiv.org/abs/2607.06708>
- **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>
- **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>
- **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>
- **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>
- **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>
- McCreery, P¹. & **Schmidt, S. P.**¹ et al. A Convective Core and Radiative Envelope Rule Out Favored Tidal Dissipation Models in the WASP-12 System
To be submitted imminently

Second Author

- 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
Under Review at AJ

Major Contributions

- 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>

¹Jointly First Authors

- 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>
- 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>

Contributing Author

- 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>
- 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>
- 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>
- 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>
- 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>
- 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
Under review at AJ
- 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
- 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
To be submitted imminently

PRESENTATIONS

Colloquia, Seminars, & Invited Talks

- Princeton University Extrasolar Planets Discussion Group, April 6, 2026. *Exoplanet System Age as a New Dimension of Giant Planet Formation, Structure, and Evolution*
- 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*

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 16-21 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*
- ExoClimes 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.
- STScI ESPF Science Hour, March 4, 2025. *“A Comprehensive Reanalysis of K2-18 b’s JWST NIRISS + NIRSpec Transmission Spectrum”*
- 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

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 Project Title: Using Wide Binaries and Gaia Data to Generate a Fit for M Dwarf Parameters	\$8,000
AAS International Travel Award, 2026	\$1,100
JHU Physics & Astronomy EJ Rhee Travel Award, 2026	\$1,500
UNC-Chapel Hill 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

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. Schlafman)
- **NASA/Keck 2025A.** “A Measurement of Primordial Stellar Obliquity in a Wide-separation Giant Planet System” (PI: K. C. Schlafman)
- **NOIRLab/WIYN 2025A.** “A Measurement of Primordial Stellar Obliquity in a Wide-separation Giant Planet System” (PI: K. C. Schlafman)

MENTORING EXPERIENCE

Mentored Students

- **Lucy Fang**, JHU Undergraduate, with Prof. Kevin Schlafman 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

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

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

2019-2022

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 AND LEADERSHIP

Review and Referee Service

- 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**, Gender Minorities & Women in Physics JHU 2023-Present
- **Co-chair**, TRU-UE Local 197 Media and Communications Committee 2024-2026
Helped secure over \$30 million total in raises for >3,000 graduate workers at JHU
- **President**, JHU Physics and Astronomy Graduate Students 2024-2026
- **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**, JHU Physics and Astronomy Physics Fair 04/2026
- **Local Organizing Committee**, GWiP@JHU Fall Summit #3 09/2025
- **Organizer**, JHU Physics and Astronomy Physics Fair 04/2025
- **Photographer**, GWiP@JHU × Morgan State University Spring Brunch 04/2025
- **Co-organizer**, Astronomy on Tap Baltimore (Totaling 11 events thus far) 11/2022-Present
- **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 Physics and Astronomy 2024 Department Open House 03/2024

COLLABORATION MEMBERSHIPS

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

TECHNICAL SKILLS & EXPERIENCE

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

TRAININGS

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