Amy Secunda

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PROFESSIONAL POSITIONS

Flatiron Research Fellow 2024 - 2027
Center for Computational Astrophysics, Flatiron Institute

Helen Gurley Brown Post Baccalaureate Fellowship 2017 - 2018
American Museum of Natural History

EDUCATION

Princeton University
M.A. Astrophysical Sciences, May 2020
Ph.D. Astrophysical Sciences, August 2024
Advisors: Prof. Jenny E. Greene, Dr. Yan-Fei Jiang

Columbia University
Post baccalaureate Undergraduate Astrophysics, Sep 2014 - Jun 2017

Northwestern University
B.S. Theatre, cum laude Jun 2013

AWARDS AND FELLOWSHIPS

- Graduate Research Fellowship, *National Science Foundation* (2018 - 2023)
- Martin Schwarzschild Fellowship, *Princeton University* (2018 - 2019)

SUCCESSFUL GRANT PROPOSALS

- "Condolence"
  Simons Foundation Triangle Program Grant, scientist awardee
  Total Award: $30,000 (2026)

- "Condolence"
  Simons Foundation Open Interval Program Grant, scientist awardee
  Total Award: $30,000 (2025)

- "Mapping AGN Accretion Through Echo Mapping and Radiation MHD Simulations" *National Science Foundation Award Number 2306950*, co-author, PI: Jenny E. Greene Total Award: $328,865 (2023 - 2026)

PUBLICATIONS

ADS link: https://ui.adsabs.harvard.edu/public-libraries/LX2Gz49AT7SYqR6Ol16Ebg
^ = students I have mentored

FIRST AUTHOR

1. **A. Secunda**, Y. F. Jiang, J. Greene. "Disk Structure May Determine AGN Variability and Explain the Accretion Disk Size Problem: No Broad Line Region Required." *submitted to ApJ.*
2. **A. Secunda**, S. Wagner-Carena, H. Qu, S. Ho. "Measuring the Vertical Structure of Active Galactic Nuclei Disks with Transformer Models and the Vera C. Rubin Observatory." *accepted to ApJ*, arXiv:2601.08926
3. **A. Secunda**, R. S. Somerville, Y.-F. Jiang, J. E. Greene, L. J. Furtak, and A. Zitrin, "Do Little Red Dots Vary?" 2026, *ApJ*, 996, 6.
4. **A. Secunda,** Y.F. Jiang, J. Greene. "Continuum Reverberation in Active Galactic Nuclei Disks Only With Sufficient X-ray Luminosity and Low Albedo." 2025, *ApJ*, 984, 19.
5. **A. Secunda,** Y.F. Jiang, J. Greene. "Simulating X-ray Reverberation in the UV-Emitting Regions of Active Galactic Nuclei Accretion Disks with 3D Multi-Frequency Magnetohydrodynamic Simulations." 2024, *ApJL*, 965, 29.
6. **A. Secunda,** J. Greene, Y. F. Jiang, P. Z. Yao, A. Zoghbi. "Negative Lags on the Viscous Timescale in Quasar Photometry and Prospects for Detecting More with LSST." 2023, *ApJ*, 956, 2.
7. **A. Secunda,** P. Donnel, H. Ji, J. Goodman. "Magnetorotational Instability in a Swirling Partially Ionized Gas." 2023, *MNRAS*, stad2738.
8. **A. Secunda**, B. Hernandez, J. Goodman, N. W. C. Leigh, B. McKernan, K. E. S. Ford, J. I. Adorno^. "Evolution of Retrograde Orbiters in an Active Galactic Nucleus Disk." 2021, *ApJL*, 908, L27.
9. **A. Secunda**, J. M. Bellovary, M.-M. Mac Low, K. E. S. Ford, B. McKernan, N. W. C. Leigh, W. Lyra, S. Zsolt, J. I. Adorno^. "Orbital Migration of Interacting Stellar Mass Black Holes in Disks around Supermassive Black Holes II. Spins and Incoming Objects." 2020, *ApJ*, 903, 133.
10. **A. Secunda,** R. Cen, T. Kimm, Y. Gotberg, S de Mink. "Delayed Photons from Binary Evolution Help Reionize the Universe." 2020, *ApJ*, 901, 72.
11. **A. Secunda**, J. M. Bellovary, M.-M. Mac Low, K.E.S. Ford, B. McKernan, N. W. C. Leigh, W. Lyra, S. Zsolt. "Orbital Migration of Interacting Stellar Mass Black Holes in Disks around Supermassive Black Holes." 2019, *ApJ*, 878, 85.

PUBLICATIONS WITH SIGNIFICANT CONTRIBUTIONS

12. Z. Liu, R. Naidu, **A. Secunda**, et al. “How I Wonder What You Are -- JWST's Little Red Dots do not TWINKLE.” *submitted to ApJ,* arXiv:2604.13000.
13. K. Gonglewski^, **A. Secunda**, M.-M. Mac Low, K.E.S. Ford, B. McKernan, F. R. N. Schneider. “Orbital Migration of Interacting Stellar Mass Black Holes in Disks around Supermassive Black Holes. III. Mass Distribution of Hierarchical Mergers.” *accepted to ApJ,* arXiv:2608.1364.
14. L. Furtak, **A. Secunda,** et al. “Investigating photometric and spectroscopic variability in the multiply-imaged Little Red Dot A2744-QSO1.” 2025, *A&A*, 698, 227
15. P. Yao, **A. Secunda,** Y. F. Jiang, J. Greene, A. Villar. “A Negative Long Lag from the Optical to the UV Continuum in Fairall 9.” 2023, *ApJ*, 953, 43.
16. E. Berzin^, **A. Secunda**, R. Cen, Y. Gotberg, A. Menegas^. “Determining the Presence of Population III and Stripped Stars in Galaxies at the Epoch of Reionization.” 2021, *ApJ*, 918, 5.
17. R.E. Sanderson, **A. Secunda**, K.V. Johnston, J. Bochanski. “New Views of the Distant Stellar Halo.” 2017, *MNRAS* 470, 5014.

CONTRIBUTING AUTHOR

18. E. Lambrides,...**A. Secunda**, et al. “The GlimmIr: Spectroscopic Variability in a z~7 LRD Indicates Rapid Changes in Both the Narrow and Broad Line Regions.” *submitted to ApJL*, arXiv:2604.25991.
19. Y. Wang,...**A. Secunda**, et al. “Optical Counterparts to X-ray Sources in LSST DP1.” 2026, *ApJ*, 284, 13.
20. S. Nasim, G. Fabj, F. Caban, **A. Secunda**, K. E. S. Ford, B. McKernan, J. Bellovary, N. W. C. Leigh, W. Lyra. “Aligning Retrograde Nuclear Cluster Orbits with an Active Galactic Nucleus Accretion Disc.” 2023, *MNRAS*, 522, 5393.
21. P. Amaro-Seoane,...**A. Secunda**, et al. “Astrophysics with the Laser Interferometer Space Antenna.” 2023, *Living Reviews in Relativity*, 26, 2.

INVITED TALKS

- “Uncovering the Nature of Active Galactic Nuclei from z=0 to z=9 with Variability,” *Stony Brook Astronomy Seminar* (September 2026)
- “Can we use variability to constrain LRD Models?” *NBIA/DAWN Workshop on Little Red Dots* (August 2026)
- “Uncovering the Nature of Active Galactic Nuclei from z=0 to z=9 with Variability,” *Athens Observatory* (May 2026)
- “Uncovering the Nature of Active Galactic Nuclei Accretion Disks,” *University of Wisconsin Colloquium* (February 2026)
- “AGN Variability and Simulating Observables with Radiation Magnetohydrodynamics,” *UC Berkeley Theoretical Astrophysics Center Seminar* (October 2025)

- "Using Machine Learning to Probe AGN Accretion Disk Structure," *Yale Data Science x Astronomy-Astrophysics Seminar* (October 2025)
- "Reverberation Mapping Active Galactic Nuclei Accretion Disks Via Observational and Theoretical Routes," *American Museum of Natural History Colloquium* (February 2025)
- "BHs in AGN disks and GWs," *Georgia Institute of Technology Colloquium* (April 2023)
- "Probing Accretion Disk Structure with Long Negative Lags," *AGN Santa Fe: Where are the Objects in AGN Disks* (March 2023)
- "How to Form Binaries in AGN Disks," *Niels Bohr Institute of Astronomy Black Hole Dynamics Workshop* (May 2022)
- "BHs in AGN Disks and GWs," *Universidad de Concepción Colloquium* (June 2021)
- "Overview of N-Body Simulations of BHs in AGN Disks," *AGN Disks: Where the Wild Things Are*, Center for Computational Astrophysics (September 2020)

MOST RECENT CONTRIBUTED TALKS

- "Do Little Red Dots Vary?" *The First Billion Years at Aspen Center for Physics* (March 2026)
- "Measuring Lags on the Inflow Timescale: Observations and Simulations," *Rubin AGN Science Collaboration Summer Meeting in Crete* (May 2026)

INVITED OUTREACH TALKS

- "Echo Mapping: Your Guide to the Supermassive Black Hole Region," *Rockland Astronomy Club* (Apr 2025)
- Guest on iHeart Radio podcast, *The Limit Does Not Exist*, episode: "Star Power" (Mar 2020)
- Plenary Speaker, *Annual New York City Girls Computer Science and Engineering Conference* (Fall 2019)
- "Black Holes and Gravitational Waves: An Impossible Discovery," *Princeton Science Cafe* (Dec 2019)
- "Why I am thankful for gas," *Astronomy on Tap NYC* (Nov 2017)

MENTORING

Graduate Students: Katherine Gonglewski (U of Arizona), Roberto Serrano (IL State)

Undergraduate Students: Alexander Menegas (Princeton), Elizabeth Berzin (Princeton), Kate Macakanja (Princeton), Nicole Gountanis (Princeton), Jose I. Adorno (CUNY), Méabh Jack (CUNY)

High School Students: Juliet Cornelis, Denelis Ferreira, Anais Gomez, Ariba Khan, Anna Li, Audrey Soo

TEACHING

- Module Instructor, "Tidal Disruption Events" and "Active Galactic Nuclei," *Center For Computational Astrophysics LSST Summer School* (Summer 2025)
- Course Coordinator/Instructor, "MATH 015: Developmental Math," *Edna Mahan Correctional Facility for Women* (Spring 2024)
- Curriculum Development/Instructor, "PHYS 130: Astronomy," *Edna Mahan Correctional Facility for Women* (Fall 2023)
- Instructor, "MATH 020: Beginning Algebra," *East Jersey State Prison* (2021 - 2022)
- Teaching assistant, "Scientific Theory and Practice," *Summer research internship at Princeton for Prison Teaching Initiative Alumni* (Summer 2023)
- Assistant in instruction, "Planets in the Universe," *Dept. of Astrophysical Sciences, Princeton University* (Spring 2020)
- Instructor, BridgeUP: STEM After-School and Summer Scientific Coding Classes, *American Museum of Natural History* (2017 - 2018)

OUTREACH AND SERVICE

- LSST AGN Variability Subgroup Co-Leader (2024 -)
- Black Hole Interest Group Co-Leader at the Center for Computational Astrophysics (2025 -)
- Co-author of Princeton's Astrophysical Sciences Department's Diversity Equity and Inclusion Statement
- Head of Princeton Astrophysics Mentoring Committee (2023 - 2024)
- Princeton Astrophysics and Physics AIP TEAM-UP team member (2021 - 2024)
- Full Member of LSST AGN Science Collaboration (2022 -)
- Associate Member of LISA Astrophysics Working Group (2018 -)
- Peer Reviewer *Nature, ApJ, MNRAS, A&A* (2022 -)