Stanley Antedio Baronett

Curriculum Vitae

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Education

University of Nevada, Las Vegas (UNLV) — Las Vegas, NV
- Ph.D. in Astronomy (Advisor: Zhaohuan Zhu) — 2022–2026
- M.S. in Astronomy, GPA: 4.00/4.00 (Advisors: Zhaohuan Zhu, Chao-Chin Yang) — 2020–2022
- B.S. in Physics, Concentration in Computational Physics, GPA: 3.76/4.00 — 2018–2020

University of Hawai'i at Mānoa (UHM) — Honolulu, HI
- M.A. in Philosophy, GPA: 3.96/4.00 (Advisors: Roger Ames, Kenneth Kipnis) — 2013–2015
- B.A. in Philosophy, GPA: 3.88/4.00 (Magna Cum Laude) — 2007–2012

Advanced Technologies Academy — Las Vegas, NV
- Honors Diploma in Computer Science, weighted GPA: 4.675/4.000 — 2003–2007

Employment

UNLV — Las Vegas, NV
- UNLV Foundation Board of Trustees Graduate Fellow — Aug. 2024–May 2026
- Summer Doctoral Research Fellow — May 2024–Aug. 2024
- Graduate Research Assistant — May 2021–Aug. 2023, Jan. 2024–May 2024
- Graduate Teaching Assistant — Aug. 2020–May 2021
- Student Assistant — Jan. 2020–May 2020

Center for Computational Astrophysics, Flatiron Institute — New York, NY
- Pre-Doctoral Research Analyst — Sept. 2023–Jan. 2024

Qdigital Technology Services — Las Vegas, NV
- IT Consultant — Aug. 2016–Aug. 2018

Hawaii Natural Energy Institute — Honolulu, HI
- IT Specialist — Feb. 2009–May 2016

Awards

- UNLV Foundation Board of Trustees Fellowship ($30,000/yr.) 2024–2026
- Nevada NASA Space Grant Consortium Graduate Fellowship ($20,000) 2021–2022
- Summer Doctoral Research Fellowship (UNLV) ($7,000) 2024
- Russell L. and Brenda Frank Scholarship (UNLV) ($2,500, $2,500, $2,830, $2,900) 2020–2025
- Alumni Association Scholarship (UNLV) ($2,500) 2021–2022
- Patricia Sastaunik Scholarship (UNLV) ($2,500) 2021–2022
- Kenneth R. Sites Physics Scholarship (UNLV) ($1,500) 2019–2020
- Donna Weistrop and David B. Shaffer Scholarship (UNLV) ($1,000) 2021–2022
- Dean's Honor List (UNLV) 2018
- Departmental Merit Scholarship (Philosophy, UHM) 2008–2011, 2013–2015
- Dean's List (UHM) 2007–2012

Service

Reviewer for the following journals
Monthly Notices of the Royal Astronomical Society (MNRAS) 2024

Organizer for UNLV Star & Planet Formation Group (SPFG) Meetings Fall 2024–Spring 2025

Scheduled, hosted, and facilitated talks, visitors, and weekly discussions

Web Developer: created, deployed, and maintained websites for
Planet Formation in the Southwest Plus (PFITS+) collaboration 2024–present
UNLV SPFG 2021–present
Atomic-Level Structural Dynamics in Catalysts (ALSDC) Group 2020
Materials Modeling and Informatics (MMI) 2020

Membership

- **American Astronomical Society** (AAS) 2025–present
- **Phi Beta Kappa** (ΦBK), the oldest academic honor society in the United States 2011–present
- **Sigma Pi Sigma** (ΣΠΣ), American honor society for physics and astronomy 2020–present

Teaching

- **Teaching Assistant** at UNLV Fall 2020–Spring 2021
  Physics for Scientists and Engineers Lab III (PHYS 182L)
- **Grader** at UHM Fall 2013
  Introduction to Deductive Logic (PHIL 110)

Mentoring

- **Sudat Khan**, Ph.D. student (UNLV) Fall 2024–present
  Reviewed funding applications, provided guidance on Ph.D.-program and advisor–advisee relationship, helped optimize use of NASA Advanced Supercomputing (NAS) Division resources
- **Hening Wu**, Ph.D. student (UNLV) Fall 2024–present
  Consulted on Athena++ code development and use of NAS resources

Outreach

Leadership

- **Astronomy on Tap, Las Vegas** 2022–present
  Lead organizer of the following events:
  "Astronomy on Tap, Las Vegas XIII", "Astronomy on Tap, Las Vegas XII", "Astronomy on Tap, Las Vegas XI", "VAR! 100 Years of Variable Stars & Extragalactic Astronomy", "Journey to the Center of the Earth", "Universe in a Box", "Backyard Telescopes", "The Horrors of Black Holes"
- Neighborhood Star Party, Las Vegas, NV Oct. 2022
  Helped Prof. Jason Steffen organize the event at Sonoma at Summerlin by Coleman HOA

STEM Engagment

- **Event Supervisor**, Nevada Science Olympiad State Tournament, Division B (middle school) 2022–2023
  Developed and administered written exams for the Solar System event
- **Judge**, Beal Bank USA Southern Nevada Regional Science & Engineering Fair 2022–2025
  Elementary, middle, and high school divisions

Exhibitions

- Inquiry IV: The Art of Scientific Discovery (UNLV College of Sciences) Apr. 2025
  Display piece entitled "Streaming Instability II"
- Inquiry III: The Art of Scientific Discovery (UNLV College of Sciences) Oct. 2022
  Display piece entitled "Streaming Instability"
- NASA@SC21, NASA Science and Engineering Powered by HPC Nov. 2021
  Protoplanetary Disk Simulations from Large to Small Scales

Publications

Refereed authorship on the SAO/NASA Astrophysics Data System (ADS)

11. **Baronett, S. A.**, Lyra, W., Aly, H., Brouillette, O., De Cun, V. I., Flock, M., Huang, P., Krapp, L., Lesur, G., Li, S., Lim, J., Paardekooper, S.-J., Simon, J. B., Sudarshan, P. & Yang, C.-C. Streaming Instability Code Comparison: Unstratified Models with Stokes Unity (submitted).
10. **Baronett, S. A.**, Jiang, Y.-F., Zhu, Z., Zhang, S. & Armitage, P. J. A Framework to Model Stellar Irradiated Disks with Frequency-dependent Absorption and Scattering Opacities in Athena++. ApJ (submitted).
9. Lim, J., **Baronett, S. A.**, Simon, J. B., Yang, C.-C., Sengupta, D., Umurhan, O. M. & Lyra, W. Bridging Unstratified and Stratified Simulations of the Streaming Instability for $\tau_s = 0.1$ Grains. ApJ **993,** 12. doi:10.3847/1538-4357/ae01a6 (Oct. 2025).
8. Lim, J., Simon, J. B., Li, R., Carrera, D., **Baronett, S. A.**, Youdin, A. N., Lyra, W. & Yang, C.-C. Probing Conditions for Strong Clumping by the Streaming Instability: Small Dust Grains and Low Dust-to-gas Density Ratio. ApJ **981,** 160. doi:10.3847/1538-4357/adb311 (Mar. 2025).
7. Lepp, S., Martin, R. G. & **Baronett, S. A.** Polar Orbits around the Newly Formed Earth–Moon Binary System. ApJ **971,** 73. doi:10.3847/1538-4357/ad62fa (Aug. 2024).
6. Chen, C., **Baronett, S. A.**, Nixon, C. J. & Martin, R. G. On the origin of polar planets around single stars. MNRAS **533,** L37–L42. doi:10.1093/mnrasl/slae058 (Sept. 2024).
5. **Baronett, S. A.**, Yang, C.-C. & Zhu, Z. Dust-gas dynamics driven by the streaming instability with various pressure gradients. MNRAS **529,** 275–295. doi:10.1093/mnras/stae272 (Mar. 2024).
4. Ferich, N., **Baronett, S. A.**, Tamayo, D. & Steffen, J. H. The Yarkovsky Effect in REBOUNDx. ApJS **262,** 41. doi:10.3847/1538-4365/ac8d60 (Oct. 2022).
3. **Baronett, S. A.**, Ferich, N., Tamayo, D. & Steffen, J. H. Stellar evolution and tidal dissipation in REBOUNDx. MNRAS **510,** 6001–6009. doi:10.1093/mnras/stac043 (Mar. 2022).
2. Li, J., Liu, J., **Baronett, S. A.**, Liu, M., Wang, L., Li, R., Chen, Y., Li, D., Zhu, Q. & Chen, X.-Q. Computation and data driven discovery of topological phononic materials. *Nature Communications* **12,** 1204. doi:10.1038/s41467-021-21293-2 (Jan. 2021).
1. **Baronett, S. A.** in *Distributing Worlds through Aesthetic Encounters* (eds Stoll, J., Xiang, S. & Underwood, B.) 141–153 (Cambridge Scholars Publishing, Nov. 2017). https://www.cambridgescholars.com/product/978-1-5275-0035-8.

Presentations

Seminars

- (Invited) Orbital Dynamics & Planetology Group, São Paulo State University, Brazil 2021
  Stellar Evolution and Tidal Dissipation in REBOUNDx (Apr. 16)

Talks

- Center for Computational Astrophysics Pre-Doc Symposium, Flatiron Institute, New York, NY 2024
  Radiation Transport in Protoplanetary Disks (Jan. 19)

Posters

- Origins of Solar Systems Gordon Research Conference (GRC), Mount Holyoke College, MA 2025
  From Dust to Planets: Dust–Gas Dynamics and Radiation Transport in Protoplanetary Disks (Jun. 15–20)
- Europlanet Science Congress, Berlin, Germany 2024
  Radiation hydrodynamics of protoplanetary disks with frequency-dependent dust opacities (Sept. 8–13)
- Emerging Researchers in Exoplanet Science Symposium IX, Cornell University, Ithaca, NY 2024
  Radiation hydrodynamics of protoplanetary disks with frequency-dependent dust opacities (Jul. 10–12)
- 50 years of Binaries and Discs: Lubow@75, University of Nevada, Las Vegas 2024
  Dust–Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients (May 6–9)
- Origins of Solar Systems GRC, Mount Holyoke College, MA 2023
  Dust–Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients (Jun. 11–16)
- Origins of Solar Systems Gordon Research Seminar, Mount Holyoke College, MA 2023
  Dust–Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients (Jun. 10–11)
- AASTCS 9: Exoplanets IV, Las Vegas, NV 2022
  Dust–Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients (May 2–6)

Experience

UNLV — Las Vegas, NV
UNLV Foundation Board of Trustees Graduate Fellow — Fall 2024–Spring 2026
- Dust–gas dynamics and radiation transport in protoplanetary disks
- Developed computational frameworks linking stellar irradiation, disk thermodynamics, and aerodynamic processes driving planetesimal formation

Center for Computational Astrophysics, Flatiron Institute (FI) — New York, NY
Pre-Doctoral Research Analyst under Yan-Fei Jiang and Phil Armitage — Sept. 2023–Jan. 2024
- Frequency-dependent dust opacities for irradiated disks
- Developed and compared hydrostatic models between Athena++ with multigroup radiation and RADMC-3D

FI Computational Fluid Dynamics for Astrophysics Summer School — New York, NY
One of 20 invited students out of 200 applicants — July 2023–Aug. 2023
- Finite-volume, spectral, smooth-particle-hydrodynamics, moving-mesh, and high-order numerical techniques
- Applied tutorials on physical processes (MHD and radiation transport) and architectures (CPU and GPU)

UNLV — Las Vegas, NV
Graduate Research Assistant under Zhaohuan Zhu — May 2021–May 2024
- Dust-gas dynamics driven by the streaming instability with various pressure gradients
- Developed and analyzed Athena++ models with Lagrangian particles

UNLV — Las Vegas, NV
Jason Steffen Research Group — May 2019–present
- Stellar evolution and tidal dissipation on planetary orbital dynamics
- Contributed REBOUNDx modules for dissipative tides and parameter interpolation of MESA stellar data

UNLV — Las Vegas, NV
Student Assistant under Qiang Zhu — Jan. 2020–May 2020
- Web application development
- Topological Phonon Database and Virtual X-ray Diffraction

Qdigital Technology Services — Las Vegas, NV
IT Consultant — Aug. 2016–Aug. 2018
- Managed services, networking, systems infrastructure, support, information security, cloud and on-premises project implementation and deployment, enterprise resource planning, and web development

Hawaii Natural Energy Institute — Honolulu, HI
IT Specialist — Feb. 2009–May 2016
- Procured, deployed, and managed hardware, software, networks, and web content