Stanley A. Baronett

Curriculum Vitae

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Education

University of Nevada, Las Vegas (UNLV) — Las Vegas, NV
Ph.D. in Astronomy — Fall 2022–present

- Advisor: Zhaohuan Zhu

UNLV — Las Vegas, NV
M.S. in Astronomy, GPA: 4.00/4.00 — Fall 2020–Spring 2022

- Advisors: Zhaohuan Zhu, Chao-Chin Yang
- Thesis: "Dust-Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients"

UNLV — Las Vegas, NV
B.S. in Physics, GPA: 3.76/4.00 — Fall 2018–Spring 2020

- Concentration in Computational Physics
- Sigma Pi Sigma (honor society for physics and astronomy)

University of Hawai'i at Mānoa (UHM) — Honolulu, HI
M.A. in Philosophy, GPA: 3.96/4.00 — Fall 2013–Fall 2015

- Advisors: Roger Ames, Kenneth Kipnis
- Thesis: "Sustaining Harmony Through Professional Roles"

UHM — Honolulu, HI
B.A. in Philosophy, GPA: 3.88/4.00 — Fall 2007–Spring 2012

- Magna Cum Laude
- Phi Beta Kappa (academic honor society)

Experience

UNLV — Las Vegas, NV
Graduate Research Assistant under Zhaohuan Zhu — Fall 2020–present

- From Dust to Planets: Coupling Dust-Gas Dynamics with Multifrequency Radiation Transport in Protoplanetary Disks
- Numerical modeling using multigroup radiation hydrodynamics with Lagrangian particles (Athena++)

Center for Computational Astrophysics, Flatiron Institute (FI) — New York, NY
Pre-Doctoral Research Analyst under Yan-Fei Jiang and Phil Armitage — September 2023–January 2024

- Influence of multifrequency dust opacities on the thermodynamic structure of protoplanetary disks
- Numerical modeling using multifrequency Monte Carlo radiative transfer (RADMC-3D) and multigroup radiation hydrodynamics (Athena++)

FI Computational Fluid Dynamics for Astrophysics Summer School — New York, NY
One of 20 invited students out of 200 applicants — July 2023–August 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
Jason Steffen Research Group Summer 2019–present

- Influence of stellar evolution and tidal dissipation on planetary orbital dynamics
- Numerical modeling of stellar evolution (MESA) and orbital dynamics using N-body simulations (REBOUNDx contributor)

UNLV Las Vegas, NV
Student Assistant under Qiang Zhu Spring 2020

- Web Application Development
- Front and back-end development and deployment of the Topological Phonon Database and Virtual X-ray Diffraction

Qdigital Technology Services Las Vegas, NV
IT Consultant Summer 2016–Summer 2018

- Provided 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 Spring 2009–Spring 2016

- Sole IT administrator responsible for the procurement, deployment, and management of hardware, software, and various networks, and the facilitation of website content development

Publications

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, 2018).

Authorship on the SAO/NASA Astrophysics Data System (ADS)

Fellowships, Scholarships, and Awards

- UNLV Foundation Board of Trustees Fellowship ($30,000/yr.) 2024–2026
- Summer Doctoral Research Fellowship (UNLV) ($7,000) 2024
- FI Center for Computational Astrophysics Pre-doctoral Fellow 2023–2024
- Russell L. and Brenda Frank Scholarship ($2,500, $2,830) 2022–2024
- Nevada Space Grant Consortium Graduate Fellowship ($20,000) 2021–2022
- Alumni Association Scholarship (UNLV) ($2,500) 2021–2022
- Donna Weistrop and David B. Shaffer Scholarship ($1,000) 2021–2022
- Patricia Sastaunik Scholarship ($2,500) 2021–2022

- Russell L. and Brenda Frank Scholarship ($2,500) 2020–2021
- Kenneth R. Sites Physics Scholarship ($1,500) 2019–2020
- Dean's Honor List (UNLV) 2018
- Departmental Merit Scholarship (Philosophy, UHM) 2013–2015
- Departmental Merit Scholarship (Philosophy, UHM) 2008–2011
- Dean's List (UHM) 2007–2012

Presentations

- **Talk**, Center for Computational Astrophysics Pre-Doc Symposium, FI, New York, NY 2024
  Radiation Transport in Protoplanetary Disks (Jan. 19)
- **Poster**, Origins of Solar Systems Gordon Research Conference: Chemical and Dynamical Constraints on Planet Formation, Mount Holyoke College, MA 2023
  Dust-Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients (Jun. 11–16)
- **Poster**, Origins of Solar Systems Gordon Research Seminar: Constraining the Origin and Evolution of Planetary Systems Through a Multidisciplinary Approach, Mount Holyoke College, MA 2023
  Dust-Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients (Jun. 10–11)
- **Poster**, AASTCS 9: Exoplanets IV, Las Vegas, NV 2022
  Dust–Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients (May 2–6)
- **Exhibit** (Virtual), NASA@SC21, NASA Science and Engineering Powered by HPC 2021
  Protoplanetary Disk Simulations from Large to Small Scales (Nov. 8)
- **Seminar** (Virtual), Orbital Dynamics & Planetology Group, São Paulo State University, Brazil 2021
  Stellar Evolution and Tidal Dissipation in REBOUNDx (Apr. 16)

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)

Outreach

- **Lead Organizer**, Astronomy on Tap, Las Vegas 2022–present
  Helped organize the following events:
  "Astronomy on Tap, Las Vegas XI" (Mar. 5, 2024)
  "VAR! 100 Years of Variable Stars & Extragalactic Astronomy" (Oct. 3, 2023)
  "Journey to the Center of the Earth" (Jun. 20, 2023)
  "Universe in a Box" (Mar. 2, 2023)
  "Backyard Telescopes" (May 26, 2022)
  "The Horrors of Black Holes" (Oct. 27, 2022)
- **Judge**, Beal Bank USA Southern Nevada Regional Science & Engineering Fair 2022–2024
  Elementary, middle, and high school divisions
- **Event Supervisor**, Nevada Science Olympiad State Tournament, Division B (middle school) 2022–2023
  Developed and administered written exams for the Solar System event
- **Exhibit**, Inquiry III: The Art of Scientific Discovery (UNLV College of Sciences) Oct 2022
  Submitted a display piece entitled "Streaming Instability"
- **Assistant Organizer**, Neighborhood Star Party, Las Vegas, NV 2022

Helped Prof. Jason Steffen organize the event at Sonoma at Summerlin by Coleman HOA (Oct. 8)