

# Stanley A. Baronett

Curriculum Vitae

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## EDUCATION

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### University of Nevada, Las Vegas (UNLV)

Ph.D. in Astronomy

Las Vegas, NV

Fall 2022–present

- Advisor: [Zhaohuan Zhu](#)

### UNLV

M.S. in Astronomy, GPA: 4.00/4.00

Las Vegas, NV

Fall 2020–Spring 2022

- Advisors: [Zhaohuan Zhu](#), [Chao-Chin Yang](#)
- Thesis: “Dust-Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients”

### UNLV

B.S. in Physics, GPA: 3.76/4.00

Las Vegas, NV

Fall 2018–Spring 2020

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

### University of Hawai‘i at Mānoa (UHM)

M.A. in Philosophy, GPA: 3.96/4.00

Honolulu, HI

Fall 2013–Fall 2015

- Advisors: [Roger Ames](#), [Kenneth Kipnis](#)
- Thesis: “Sustaining Harmony Through Professional Roles”

### UHM

B.A. in Philosophy, GPA: 3.88/4.00

Honolulu, HI

Fall 2007–Spring 2012

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

## EXPERIENCE

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### UNLV

Graduate Research Assistant under [Zhaohuan Zhu](#)

Las Vegas, NV

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)

Pre-Doctoral Research Analyst under [Yan-Fei Jiang](#) and [Phil Armitage](#)

New York, NY

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

One of 20 invited students out of 200 applicants

New York, NY

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

Jason Steffen Research Group

Las Vegas, NV  
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

Student Assistant under **Qiang Zhu**

Las Vegas, NV  
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

IT Consultant

Las Vegas, NV  
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

IT Specialist

Honolulu, HI  
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

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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](https://doi.org/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/mnras/slaf058](https://doi.org/10.1093/mnras/slaf058) (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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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

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|---|--------------------|-----------|
| • UNLV Foundation Board of Trustees Fellowship                        | (\$30,000/yr.)     | 2024–2026 |
| • Summer Doctoral Research Fellowship (UNLV)                          | (\$7,000)          | 2024      |
| • <b>FI Center for Computational Astrophysics Pre-doctoral Fellow</b> |                    | 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

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- **Poster**, *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)
- **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

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- **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

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- **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  
*Elementary, middle, and high school divisions* 2022–2024
- **Event Supervisor**, Nevada Science Olympiad State Tournament, Division B (middle school)  
*Developed and administered written exams for the *Solar System* event* 2022–2023
- **Exhibit**, Inquiry III: The Art of Scientific Discovery (UNLV College of Sciences)  
*Submitted a display piece entitled “Streaming Instability”* Oct 2022
- **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)*