

Stanley A. Baronett

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Curriculum Vitae

EDUCATION

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

Ph.D. in Astronomy

Las Vegas, NV

Fall 2022–present

- Advisor: **Zhaohuan Zhu**
- Dissertation: “From Dust to Planets: Dust–Gas Dynamics and Radiation Transport in Protoplanetary Disks”

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

UNLV

UNLV Foundation Board of Trustees Graduate Fellow

Las Vegas, NV

Summer 2021–Spring 2024

- Dust–gas dynamics and radiation transport in protoplanetary disks
- Developing self-consistent global **Athena++** models with multigroup radiation-hydrodynamics and dust

UNLV

Graduate Research Assistant under **Zhaohuan Zhu**

Las Vegas, NV

Summer 2021–Spring 2024

- **Dust–gas dynamics driven by the streaming instability with various pressure gradients**
- Developed and analyzed **Athena++** models with Lagrangian particles

Center for Computational Astrophysics (**CCA**), Flatiron Institute (**FI**)

Pre-Doctoral Research Analyst under **Yan-Fei Jiang** and **Phil Armitage**

New York, NY

Sep 2023–Jan 2024

- Frequency-dependent dust opacities for irradiated disks
- Developed and compared 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

Jul 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

Jason Steffen Research Group

Summer 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

Spring 2020

- Web application development
- Topological Phonon Database and Virtual X-ray Diffraction

Qdigital Technology Services

Las Vegas, NV

IT Consultant

Summer 2016–Summer 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

Spring 2009–Spring 2016

- Procured, deployed, and managed hardware, software, networks, and web content

PUBLICATIONS

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*, (Accepted). doi:[10.48550/arXiv.2410.17319](https://doi.org/10.48550/arXiv.2410.17319) (Oct. 2024).
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/mnrasl/slae058](https://doi.org/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](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).

Refereed authorship on the Astrophysics Data System (ADS)

AWARDS

• UNLV Foundation Board of Trustees Fellowship	(\$30,000/yr.)	2024–2026
• Summer Doctoral Research Fellowship (UNLV)	(\$7,000)	2024
• FI CCA Pre-doctoral Fellowship		2023–2024
• Russell L. and Brenda Frank Scholarship	(\$2,500, \$2,830, \$2,900)	2022–2025
• Nevada NASA 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

• Poster , Europlanet Science Congress 2024 , Berlin, Germany	2024
<i>Radiation hydrodynamics of protoplanetary disks with frequency-dependent dust opacities</i> (Sept. 8–13)	
• Poster , Emerging Researchers in Exoplanet Science Symposium IX , Cornell University, Ithaca, NY	2024
<i>Radiation hydrodynamics of protoplanetary disks with frequency-dependent dust opacities</i> (Jul. 10–12)	
• Poster , 50 years of Binaries and Discs: Lubow@75 , UNLV, Las Vegas, NV	2024
<i>Dust-Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients</i> (May 6–9)	
• Talk , Center for Computational Astrophysics Pre-Doc Symposium, FI, New York, NY	2024
<i>Radiation Transport in Protoplanetary Disks</i> (Jan. 19)	
• Poster , Origins of Solar Systems Gordon Research Conference: Chemical and Dynamical Constraints on Planet Formation , Mount Holyoke College, MA	2023
<i>Dust-Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients</i> (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
<i>Dust-Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients</i> (Jun. 10–11)	
• Poster , AASTCS 9: Exoplanets IV , Las Vegas, NV	2022
<i>Dust-Gas Dynamics Driven by the Streaming Instability with Various Pressure Gradients</i> (May 2–6)	
• Exhibit (Virtual), NASA@SC21 , NASA Science and Engineering Powered by HPC	2021
<i>Protoplanetary Disk Simulations from Large to Small Scales</i> (Nov. 8)	
• Seminar (Virtual), Orbital Dynamics & Planetology Group , São Paulo State University, Brazil	2021
<i>Stellar Evolution and Tidal Dissipation in REBOUNDx</i> (Apr. 16)	

TEACHING

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

OUTREACH

- **Lead Organizer, Astronomy on Tap, Las Vegas** 2022–present
Organized the following events:
 - “Astronomy on Tap, Las Vegas XII” (Oct. 17, 2024)
 - “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)