

# Dr. Rixin Li

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## PROFESSIONAL APPOINTMENTS

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- **51 Pegasi b Postdoctoral Fellow** 2023 – Present  
Department of Astronomy, University of California Berkeley
- **Postdoctoral Research Associate** 2020 – 2023  
The Cornell Center for Astrophysics and Planetary Science (CCAPS), Cornell University
- **NASA Earth and Space Science Graduate Research Fellow** 2016 – 2019  
Department of Astronomy, University of Arizona

## EDUCATION

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- Ph.D. in Astronomy & Astrophysics, University of Arizona 2014 – 2020  
Advisor: Andrew Youdin  
Thesis: *Simulating Planetesimal Formation in the Kuiper Belt and Beyond*
- B.Sc. in Astronomy, Peking University 2010 – 2014

## RESEARCH INTERESTS

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Computational and theoretical astrophysics; star and planet formation; small bodies in the solar system; dusty accretion disks; object-disk interactions; gravitational wave sources

## HONORS AND AWARDS

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- 51 Pegasi b Postdoctoral Fellowship, Heising-Simons Foundation 2023 – 2026
- Departmental Scholarship Award, College of Science, University of Arizona 2020
- NASA Earth and Space Science Fellowship (NESSF), NASA 2016 – 2019
- College of Science Fellowship, University of Arizona 2014 – 2015
- Study Abroad Scholarship for Excellent Students, China Scholarship Council 2013
- First Lin-Qiao Prize for Excellent Undergraduate Research, Peking University 2012
- May Fourth Scholarship for Excellent Students, Peking University 2012
- National Creative Research Fund for Undergraduate Research, Peking University 2012
- Scholarship for Outstanding Students, National Astronomical Observatories of China 2011

## SELECTED ORAL PRESENTATIONS

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- 02/2023: **Invited** seminar talk, Yale University
- 02/2023: **Invited** seminar talk, Earth 2.0 Science Seminar Series (virtual)
- 11/2022: **Invited** seminar talk, Center for Relativistic Astrophysics, Georgia Tech
- 11/2022: **Invited** seminar talk, Iowa State University (virtual)
- 07/2022: Contributed Talk, *OWL Exoplanet Summer Program*, UC Santa Cruz
- 06/2022: **Invited** talk, *Planets in the Desert - A Streaming Instability Code Comparison* (virtual)
- 06/2022: **Invited** seminar talk, The Center for Astrochemical Studies, MPE, Germany (virtual)
- 04/2022: **Invited** talk, *The 53rd DDA Meeting*, CCA, Flatiron Institute
- 04/2022: **Invited** discussion talk, *Stellar and Black Hole Binary Accretion and Evolution*, KITP
- 12/2021: Seminar talk, Astrophysical Lunch, CCAPS, Cornell University (virtual)
- 11/2020: Seminar talk, Planetary Lunch, CCAPS, Cornell University
- 12/2020: Seminar talk, Origins Seminar, University of Arizona (virtual)
- 11/2020: **Invited** talk, *Planetesimal Formation Meeting*, Lund University, Sweden (virtual)
- 10/2020: **Invited** talk, *Earth 2.0 Transit Survey Space Mission Science Meeting*, China (virtual)
- 01/2020: Contributed talk, *235th American Astronomical Society Meeting*, Hawaii
- 11/2019: **Invited colloquium** talk, New Mexico State University
- 07/2019: **Invited** talk, *Turbulence in PPDs Meeting*, Ringberg, Germany
- 07/2019: Seminar talk, Planet and Star Formation Coffee, MPIA, Germany
- 06/2019: Contributed talk, *From Star to Planet II*, Gothenburg, Sweden
- 05/2019: Contributed talk, *New Horizons in Planetary Systems*, Victoria, Canada
- 02/2018: Contributed talk, *Steward Observatory Internal Symposium*, University of Arizona
- 08/2017: Contributed talk, *Protoplanetary Disk Workshop*, Los Alamos National Lab
- 05/2017: Seminar talk, ITA, ZAH, University of Heidelberg, Germany
- 03/2016: Contributed talk, *Steward Observatory Internal Symposium*, University of Arizona

## GRANTS

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- Co-I: ACCESS Supercomp. Allocation (Anvil+Stampede2), 2022-2023, 29 Million CPU-Hours
- Co-I: ALMA Cycle 9, *Tracing the Evolution of Substructures: A High-resolution Survey of Old Upper Sco Disks*
- Co-I: JWST Cycle 2 (submitted), *Why do some 50 Myr old stars still accrete?*

## SELECTED SERVICES

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- Referee for the *Astrophysical Journal*, the *Astrophysical Journal Letters*, and *Monthly Notices of the Royal Astronomical Society*
- Subject-matter expert reviewer in *four* NASA grant panels (XRP, EW, FINESST) since 2017
- Organizing Committee Member for *Emerging Researchers in Exoplanetary Science 2023*
- External Member for Graduate Admission Committee, Cornell University
- Local Organizing Committee Member for *Star and Planet Formation in the Southwest 2*
- Member of American Astronomical Society, plus the Division on Dynamical Astronomy
- Steward Observatory Astro-ph Science Coffee Discussion Host for 2016 – 2019
- Discussion Leader for Astro Code Coffee at Steward Observatory in 2018

## SELECTED OUTREACH

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- Member of the Cornell Astronomical Society, attending public viewing open house since 2021
- Member of Tucson Initiative for Minority Engagement in Science and TEchnology Program (TIMESTEP) for 2018 – 2020
- Senita Valley Elementary School Family Science Night in Tucson, AZ in 2015
- Volunteer at the International Astronomical Union 28th General Assembly, Beijing in 2012

## TEACHING EXPERIENCE

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|---|-----------------------|
| ○ ASTRO 6531 — <i>Astrophysical Fluid Dynamics</i>          | Spring 2023           |
| Guest Lecturer  | Cornell University    |
| ○ PHYS 105A — <i>Introduction to Scientific Computation</i> | Fall 2015             |
| Teaching Assistant  | University of Arizona |
| ○ ASTR 400B — <i>Theoretical Astrophysics</i>               | Spring 2020           |
| Teaching Assistant  | University of Arizona |

## PUBLICATIONS

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See the full list on [the SAO/NASA Astrophysics Data System \(ADS\)](#) or on [Google Scholar](#). As of March 2, 2023, h-index is 10 (on both engines). The number of total citations is 728 (by ADS) and 806 (by Google).

### First- and Second-Author Articles

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(\*: graduate/undergraduate student)

9. \*Gerbig K. & Li, R., *Planetesimal Initial Mass Functions following Diffusion Regulated Gravitational Collapse*, arXiv:2301.13297; 1st revision on the *Astrophysical Journal*

8. **Li, R.** & Lai, D., *Hydrodynamical Evolution of Black-Hole Binaries Embedded in AGN Discs: II. Dependence on Equation of State, Binary Mass, and Separation Scales*, arXiv:2207.01125; 1st revision on Monthly Notices of the Royal Astronomical Society
7. **Li, R.** & Lai, D., *Hydrodynamical Evolution of Binaries embedded in Accretion Discs*, Dec 2022, Monthly Notices of the Royal Astronomical Society, 517, 1602
6. **Li, R.**, \*Chen, Y.-X., & Lin, D., *Dust Accumulation near the Magnetospheric Truncation of Protoplanetary Discs around T Tauri Stars*, Mar 2022, Monthly Notices of the Royal Astronomical Society, 510, 5246
5. **Li, R.** & Youdin, A., *Thresholds for Particle Clumping by the Streaming Instability*, Oct 2021, the Astrophysical Journal, 919, 107
4. Nesvorný, D., **Li, R.**, Simon, J., Youdin, A., Richardson, D., Marschall, R., & Grundy, W., *Binary Planetesimal Formation from Gravitationally Collapsing Pebble Clouds*, Feb 2021, the Planetary Science Journal, 2, 27
3. **Li, R.**, Youdin, A., & Simon, J., *Demographics of Planetesimals Formed by the Streaming Instability*, Nov 2019, the Astrophysical Journal, 855, 69
2. Nesvorný, D., **Li, R.**, Youdin, A., Simon, J., & Grundy, W., *Trans-Neptunian Binaries as Evidence for Planetesimal Formation by the Streaming Instability*, Jun 2019, **Nature Astronomy**, 3, 808 (my simulation visualization was also featured on the issue cover)
1. **Li, R.**, Youdin, A. N., & Simon, J. B., *On the Numerical Robustness of the Streaming Instability: Particle Concentration and Gas Dynamics in Protoplanetary Disks*, Jul 2018, the Astrophysical Journal, 862, 14

### Other Co-Authored Articles

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5. Carrera, D., Simon, J., **Li, R.**, Kretke, K., & Klahr, H., *Protoplanetary Disk Rings as Sites for Planetesimal Formation*, 2021, the Astronomical Journal, 161, 96
4. Gole, D., Simon, J. B., **Li, R.**, Youdin, A., & Armitage, P., *Turbulence Regulates the Rate of Planetesimal Formation via Gravitational Collapse*, 2020, the Astrophysical Journal, 904, 132
3. Abod, C., Simon, J., **Li, R.**, Armitage, P., Youdin, A., Kretke, K., *The Mass and Size Distribution of Planetesimals Formed by the Streaming Instability. II. The Effect of the Radial Gas Pressure Gradient*, 2019, the Astrophysical Journal, 883, 192
2. Simon, J., Armitage, P., Youdin, A., and **Li, R.**, *Evidence for Universality in the Initial Planetesimal Mass Function*, 2017, the Astrophysical Journal Letters, 847, 12
1. Simon, J., Armitage, P., **Li, R.**, and Youdin, A., *The Initial Mass and Size Distribution of Planetesimals. I. The Role of Self-gravity*, 2016, the Astrophysical Journal, 822, 55

### Published Sole-author Open Source Softwares in Astrophysics Source Code Library

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2. Rubble: *Simulating Dust Size Distributions in Protoplanetary Disks*, 2021, ascl:2109.011
1. PLAN: *A Clump-finder for Planetesimal Formation Simulations*, 2019, ascl:1911.001