Christopher Spalding

51 Pegasi b Postdoctoral Researcher
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Professional Preparation

2013 - 2018	*Planetary Science*	Ph.D.	Calif. Institute of Technology
2009 - 2013	*Astrophysics*	BA/MSci (1st class honors)	University of Cambridge, UK

Appointments

2020 - 2024	51 Pegasi b/Lyman Spitzer Postdoctoral Fellow	Princeton University
2018 - 2020	51 Pegasi b Postdoctoral Fellow	Yale University
2013 - 2018	Graduate Research Assistant	California Institute of Technology
2015	Geophysical Fluid Dynamics Summer Fellow	Woods Hole Oceanographic Inst.
2012	CTAMOP Summer Research Fellowship	Queen's University, Belfast

Publications (* reflects student's contribution):

1. **Spalding, C.** & Hull, P. M., (2021), Towards Quantifying the Mass Extinction Debt of the Anthropocene, *Proc. R. Soc. B.,* 288, 20202332.
2. **Spalding, C.** & Millholland, S. C., (2020) Stellar Oblateness versus Distant Giants in Exciting Kepler Planet Mutual Inclinations, *The Astronomical Journal,* 160, 105.
3. Millholland, S. C. & **Spalding, C.** (2020) Formation of Ultra-Short-Period Planets by Obliquity-Driven Tidal Runaway, *The Astrophysical Journal,* 905 ,71,
4. **Spalding, C.** & Adams, F. C., (2020) The Solar wind prevents re-accretion of debris after Mercury's giant impact, *The Planetary Science Journal*, *1,* 1.
5. Lapôtre, M. G. A., O'Rourke, J. G., Schaefer, L. K., Siebach, K. L., **Spalding, C.**, Tikoo, S. M. & Wordsworth, R. D. (2020), Probing space to know Earth, *Nat Rev Earth Environ, 1-12*.
6. **Spalding, C.** (2019). Stellar winds as a mechanism to tilt the spin axes of Sun-like stars, *The Astrophysical Journa*l, *879,* 1.
7. **Spalding, C.** & Fischer, W., W., (2019). A shorter Archean day-length biases interpretations of the faint young Sun paradox, *Earth and Planetary Science Letters,* 514, 28.
8. **Spalding, C.**, Fischer, W., W. & Laughlin, G., (2018). An orbital window into the ancient Sun's mass, *The Astrophysical Journal Letters,* 896, L17.
9. **Spalding, C.** (2018). The Solar wind as a sculptor of terrestrial planet formation, *The Astrophysical Journal Letters,* 896, L19.
10. **Spalding, C.**, *Marx, N. W., & Batygin, K., (2018). The resilience of *Kepler* systems to stellar obliquity*, The Astronomical Journal,* 155, 4.
11. **Spalding, C.**, Doering, C. & Flierl, G., (2017). Resonant activation of population extinctions, *Phys. Rev. E,* 96, 042411.
12. **Spalding, C.** & Batygin, K., (2017). A secular resonant origin for the loneliness of hot Jupiters, *The Astronomical Journal,* 154, 3.
13. **Spalding, C.**, Finnegan, S. & Fischer, W., W., (2017). Energetic costs of calcification under ocean acidification, *Global Biogeochemical Cycles*, 31, 866.
14. **Spalding, C.** & Batygin, K., (2016), Spin-orbit misalignment as a driver of the *Kepler* dichotomy,

The Astrophysical Journal, 830, 5.

15. **Spalding, C.**, Batygin, K. & Adams, F. C. (2016). Resonant removal of exomoons during planetary migration. *The Astrophysical Journal*, *817*(1), 18.
16. **Spalding, C.** & Batygin, K. (2015). Magnetic origins of the stellar mass-obliquity correlation in planetary systems. *The Astrophysical Journal*, 811(2), 82.
17. **Spalding, C.**, Batygin, K. & Adams, F. C. (2014). Alignment of protostars and circumstellar disks during the embedded phase. *The Astrophysical Journal Letters*, 797(2), L29.
18. **Spalding, C.** & Batygin, K. (2014). Early excitation of spin-orbit misalignments in close-in planetary systems. *The Astrophysical Journal*, 790(1), 42.

In Review:

1. *Schultz, K., **Spalding, C.** & Batygin, K., Influence of stellar obliquity upon ultra-short period planets, *in rev. (MNRAS)*

Selected Invited Talks

1. Removing Mercury's mantle: The ancient Solar wind as a sculptor of terrestrial planetary formation (2021), University of California Santa Cruz
2. The Solar wind's role in the formation of the inner planets, (2020), Yale University
3. The Solar wind's role in the formation of the inner planets (2019), *ETH* Zurich.
4. Primordial Sculpting of Exoplanetary System Architectures (2019), University of Maine
5. The Solar Wind's Role in the Formation and Long-Term Climate of the Terrestrial Planets (2019), Harvard University, Earth & Planetary Sciences.
6. *Habex*: A Closer Look at Planetary System Architectures, (2019), *AAS* meeting, St Louis, MO
7. Extinction Dynamics Across Multiple Timescales (2018) Yale University, Geology & Geophysics
8. Primordial Sculpting of Exoplanetary System Architectures (2018) Yale University, Geology & Geophysics
9. Primordial Sculpting of Exoplanetary System Architectures (2018) Chicago, Geophysical Sciences
10. Primordial Sculpting of Exoplanetary System Architectures (2017) Cornell, Astronomy
11. Primordial Sculpting of Exoplanetary System Architectures (2017) Berkeley, Astronomy
12. The Most Catastrophic Catastrophe: Extinction dynamics within a fluctuating environment (2017) Berkeley, Integrative Biology
13. The Primordial Origins of Stellar Obliquity and the Kepler Dichotomy (2017) Harvard, Cfa
14. The Primordial Origins of Stellar Obliquity and the Kepler Dichotomy (2017) Ann Arbor, Michigan

Conference Presentations

1. The Solar Wind's Key Role in Mercury's Formation (2020), DDA meeting, virtual (oral pres.)
2. The Origin of Planetary Mutual Inclinations: Stellar Oblateness versus Distant Giants, Exoplanets III conference, virtual (poster pres.)
3. The Solar Wind as a Sculptor of Terrestrial Planet Formation (2019), DDA meeting, Boulder, CO (oral pres.)
4. The Role of Rotation Rate in the Earth's Climate Under a Faint Early Sun (2018), GSA meeting, Indianapolis, IN, (oral pres.)
5. The Resilience of *Kepler* Systems to Stellar Obliquity (2018), DPS meeting, Knoxville TN, (oral pres.)
6. The Resilience of *Kepler* Systems to Stellar Obliquity (2018), DDA meeting, San Jose CA, (oral pres.)

7. A Minimum Population Extinction Time Driven by Stochastic Environmental Forcing (Dec 2017), Palaeontological Association Annual Meeting, London, UK (oral pres.)
8. A Minimum Population Extinction Time Driven by Stochastic Environmental Forcing (2017), GSA meeting, Seattle WA (oral pres.)
9. A Secular Resonant Origin for the Loneliness of Hot Jupiters (2017), DPS meeting. Provo Utah (oral pres.)
10. The Intrinsic Multiplicity of Single-Transiting *Kepler* Systems (2017), C. Spalding, & K. Batygin, DDA, London, UK (oral pres.)
11. Spin-Orbit Misalignments as a Driver of the *Kepler* Dichotomy (2017), C. Spalding, & K. Batygin, Aspen Winter Conference, Formation and Dynamical Evolution of Exoplanets (oral pres.)
12. Spin-Orbit Misalignments as a Driver of the *Kepler* Dichotomy (2016), C. Spalding, & K. Batygin, DPS meeting, Pasadena CA (oral pres.)
13. Planetary system architectures as sculpted from binary-disk interactions (2015), C. Spalding, & K. Batygin, ExSS meeting III, Hawaii DC (poster pres.)
14. The Primordial Destruction of Moons around Giant Exoplanets through Disk-Driven Migration (2015), C. Spalding, K. Batygin & F. C. Adams, AAS/DPS meeting, Washington DC (oral pres.)
15. The Energetic Costs of Calcification Under Ocean Acidification, C. Spalding, Seth Finnegan & W. W. Fischer, GSA meeting 2015, Baltimore, MD (oral pres.)
16. Alignment of protostars and disks in the embedded phase (2015) C. Spalding, K. Batygin, 2015 DDA, Pasadena, CA (oral pres.)
17. Origins of Spin-Orbit Misalignments (2014) C. Spalding, K. Batygin, AAS/DPS meeting #46, Tucson, AZ (oral pres.)

Synergistic Activities

Teaching Assistant, Ge/Ay 133, Formation and Evolution of Planetary Systems, 2016, Caltech
Calculus: A refresher course for graduate students 2016, 2017. Caltech.
Teaching Assistant, Ge 150, Planetary Atmosphere, 2016, Caltech
Teaching Assistant, Ge/Ay 137 Planetary Physics, 2015, Caltech
Reviewer: *AAS Journals*, *Science Advances, MNRAS, Physics Letters A, Global Biogeochemical Cycles, Advances in Space Research*

Prizes/Awards

Lyman Spitzer, Jr Postdoctoral Fellowship Sept 2021-2024
51 Pegasi b Postdoctoral Fellowship July 2018-present.
NESSF Graduate Fellowship in Earth and Planetary Science, 2015-present
Ray Duncombe Prize for Dynamical Astronomy, 2015
1912 Senior Scholarship, University of Cambridge, 2013
Barnes Scholarship, Cambridge University, 2012
QinetiQ Prize for Natural Sciences, 2012

Outreach

Science Cafe Yale: Exploring Science "Lesser-known wonders in the history of life" - 2020
Leitner Family Observatory & Planetarium, "Upside-down, inside-out solar systems: the weirdest worlds within the cosmos" - Nov 2018
Science Cafe, Yale, "Lesser-known wonders in the history of life on Earth" - Nov 2018
Astronomy on Tap, "Alien worlds in our Solar System and beyond" - September 2018
Interpretive volunteer, the Natural History Museum of Los Angeles County (March 2016 - Sep 2016, Aug 2017 - Dec 2017)
South Bay Observatory Presentation. "Up-side down, Inside-out Solar Systems" - April 2017
Science Saturdays Outreach Series, Caltech (Jan 2017, 2018)

Los Angeles BIL conference “Up-side down, Inside-out Solar Systems” - April 2016