

Erik Petigura

CONTACT

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EDUCATION

Ph.D. in Astrophysics, University of California, Berkeley

Degree Date: May 2015

Thesis Title: *The Prevalence of Earth-size Planets Orbiting Sun-like Stars*

Thesis Advisor: Geoffrey Marcy

M.A. in Astrophysics, University of California, Berkeley

Degree Date: December 2011

B.A. in Physics and Astrophysics, University of California, Berkeley

Degree Date: May 2010

APPOINTMENTS & EXPERIENCE

2019– Assistant Professor, University of California, Los Angeles
2018–2019 Sagan Fellow, California Institute of Technology
2015–2018 Hubble Fellow, California Institute of Technology
2013–2015 Graduate Student Researcher, University of California, Berkeley
2013–2014 Visiting Graduate Student, University of Hawaii, Mānoa
2010–2013 NSF Graduate Research Fellow, University of California, Berkeley

RESEARCH INTERESTS

Demographics of extrasolar planets; planet formation and evolution; radial velocities; transit timing variations; precision stellar astrophysics; high performance computing; signal processing; spectroscopy of exoplanet atmospheres; machine learning.

HONORS AND AWARDS

2020 Sloan Fellowship
2019 Scialog Fellow, Research Corporation for Science Advancement
2015 Mary Elizabeth Uhl Prize, UC Berkeley Astronomy Department
2014 Cozzarelli Prize, National Academy of Sciences [[Press Release](#)]
2013 Block Award, Aspen Center for Physics
2010 American Physical Society Apker Prize Finalist [[Announcement](#)]
2010 Hertz Fellow Finalist
2010 University Medal Finalist, UC Berkeley [[Press Release](#)]
2010 Isidore Pomeranz Scholarship, UC Berkeley Physics Department
2010 Dorothea Klumpke Roberts Prize, UC Berkeley Astronomy Department

COLLOQUIA AND INVITED TALKS

Date	Venue
Mar 2020	Astronomy Colloquium, UCLA
Aug 2019	RESCEU Summer School, University of Tokyo
Apr 2019	Planetary Science Seminar, UC Santa Cruz
Nov 2018	Astronomy Colloquium, University of Arizona
Oct 2018	Astrophysics Colloquium, JPL
Aug 2018	Planetary Science Seminar, NASA Ames
Aug 2018	PRV Landscape Review, Caltech
Jun 2018	iREx Seminar U. Montreal
Mar 2018	Astronomy Colloquium, UCLA
Feb 2018	Astronomy Colloquium, University of Texas at Austin
Jan 2018	Astronomy Colloquium, Cornell Department
Jan 2018	Astronomy Colloquium, Caltech Department
Dec 2017	Exoplanets and Planet Formation, Shanghai
Oct 2017	Know Thy Star, Pasadena, California
Feb 2017	Physics Colloquium, University of California, Irvine
Oct 2016	Astronomy Colloquium, University of Texas, Austin
Sep 2016	Fellows at the Frontiers, Northwestern University
Mar 2016	Astronomy Colloquium, Tokyo University
Feb 2016	Planetary Science Division Seminar, Caltech
Oct 2015	iPLEX Seminar, UCLA
Oct 2015	Physics Colloquium, University of San Francisco
Jan 2015	Astronomy Tea Talk, Caltech
Jul 2014	Plenary Talk, Origins 2014, Nara, Japan
Jan 2014	Colloquium, University of Hawai'i Institute for Astronomy
Nov 2013	Kepler Science Conference, NASA Ames
Apr 2013	FLASH Talk, UC Santa Cruz Astronomy Department
Mar 2013	Yuk Lunch Seminar, Caltech
Sep 2012	Bay Area Exoplanet Science Meeting, SETI Institute, California

OTHER TALKS

Date	Venue
Mar 2019	Kepler Science Conference, Glendale
Oct 2018	Planetary Science Seminar, Imperial College London
Sep 2018	ExoSoCal 2018, Caltech
Aug 2017	Keck Science Meeting, Santa Cruz, CA
Jun 2017	Kepler Science Conference, NASA Ames
May 2017	Caltech Astronomy Department Tea Talk
Mar 2017	Formation and Dynamical Evolution of Exoplanets, Aspen, Colorado
Sep 2016	Keck Science Meeting, Pasadena, CA
Nov 2015	Extreme Solar Systems III, Kona, Hawai'i
Oct 2015	K2 Science Meeting, Santa Barbara, California
Sep 2015	Keck Science Meeting, 2015
Jan 2015	AAS Meeting, Seattle, Washington
Sep 2014	Toward Other Earths: The Star-Planet Connection, Porto, Portugal
Feb 2013	Exoplanets in Multi-body Systems in the Kepler Era, Aspen, Colorado
Jan 2013	AAS Meeting, Long Beach, California
Jun 2012	AAS Meeting, Anchorage, Alaska
Sep 2011	Extreme Solar Systems II, Jackson Hole, Wyoming
May 2009	APS April Meeting, Denver, Colorado

TEACHING EXPERIENCE

Date	Institution	Role
2020	UCLA	Instructor: Nature of the Universe Astro-3
2017–2018	Caltech	Organizer for California Planet Search seminar
2015–2017	Caltech	Astro-ph discussion leader and organizer
2011	UC Berkeley	Guest Lecturer: The Planets
2011	UC Berkeley	Graduate Student Instructor: The Planets
2011	UC Berkeley	Graduate Student Instructor: Optical/IR Lab

STUDENT MENTORSHIP

Judah van Zandt, UCLA Graduate Student (2019–present)

Project: RV survey of distant giant companions to TESS exoplanets

Mason MacDougall, UCLA Graduate Student (2018–present)

Project: Exoplanet eccentricities

Grant Regen, Stanford Undergraduate (2018–present)

Project: Transmission spectroscopy of sub-Saturns

Aida Behmard, Caltech Graduate Student (2017–2019)

Project: Spectroscopic characterization of cool stars.

Sarah Blunt, Caltech Postbaccalaureate Scholar (2017–2019)

Project: Gaussian process noise modeling of RV timeseries.

Madison Brady, Caltech Undergraduate (2017–2018)

Project: Mass and eccentricity measurements through radial velocities.

Samuel Yee, Caltech Undergraduate (2016–2018)

Project: Created an open-source library of high resolution, high signal-to-noise spectra of touchstone stars and developed a classification algorithm called “SpecMatch-Empirical” (published in *ApJ*, [Project Website]).

Trevor David, Caltech Graduate Student (2015–2017)

Projects: Served as a co-adviser with Lynne Hillenbrand on several projects to study planet formation around young stars. This includes the discovery of K2-33b, a Neptune-sized planet transiting a newborn star (published in *Nature*).

SELECTED PUBLICATIONS (1ST-3RD AUTHOR)

1. **Petigura, E. A.**, Livingston, J., Batygin, K., and 11 colleagues 2020, “K2-19b and c are in a 3:2 Commensurability but out of Resonance: A Challenge to Planet Assembly by Convergent Migration”, *The Astronomical Journal*, 159, 2. [\[ADS\]](#).
2. David, T. J., **Petigura, E. A.**, Luger, R., and 4 colleagues 2019, “Four Newborn Planets Transiting the Young Solar Analog V1298 Tau”, *The Astrophysical Journal*, 885, L12. [\[ADS\]](#).
3. Weiss, L. M. and **Petigura, E. A.** 2019, “The Kepler Peas in a Pod Pattern is Astrophysical”, *arXiv e-prints*, arXiv:1908.05833. [\[ADS\]](#).
4. Mills, S. M., Howard, A. W., **Petigura, E. A.**, and 3 colleagues 2019, “The California-Kepler Survey. VIII. Eccentricities of Kepler Planets and Tentative Evidence of a High-metallicity Preference for Small Eccentric Planets”, *The Astronomical Journal*, 157, 198. [\[ADS\]](#).
5. Behrard, A., **Petigura, E. A.**, and Howard, A. W. 2019, “Data-driven Spectroscopy of Cool Stars at High Spectral Resolution”, *The Astrophysical Journal*, 876, 68. [\[ADS\]](#).
6. Fulton, B. J. and **Petigura, E. A.** 2018, “The California-Kepler Survey. VII. Precise Planet Radii Leveraging Gaia DR2 Reveal the Stellar Mass Dependence of the Planet Radius Gap”, *The Astronomical Journal*, 156, 264. [\[ADS\]](#).
7. Livingston, J. H., Crossfield, I. J. M., **Petigura, E. A.**, and 13 colleagues 2018, “Sixty Validated Planets from K2 Campaigns 5-8”, *The Astronomical Journal*, 156, 277. [\[ADS\]](#).
8. Brady, M. T., **Petigura, E. A.**, Knutson, H. A., and 6 colleagues 2018, “Kepler-1656b: A Dense Sub-Saturn with an Extreme Eccentricity”, *The Astronomical Journal*, 156, 147. [\[ADS\]](#).
9. **Petigura, E. A.**, Benneke, B., Batygin, K., and 8 colleagues 2018, “Dynamics and Formation of the Near-resonant K2-24 System: Insights from Transit-timing Variations and Radial Velocities”, *The Astronomical Journal*, 156, 89. [\[ADS\]](#).
10. Yee, S. W., **Petigura, E. A.**, Fulton, B. J., and 10 colleagues 2018, “HAT-P-11: Discovery of a Second Planet and a Clue to Understanding Exoplanet Obliquities”, *The Astronomical Journal*, 155, 255. [\[ADS\]](#).
11. Fulton, B. J., **Petigura, E. A.**, Blunt, S., and 1 colleagues 2018, “RadVel: The Radial Velocity Modeling Toolkit”, *Publications of the Astronomical Society of the Pacific*, 130, 044504. [\[ADS\]](#).
12. **Petigura, E. A.**, Marcy, G. W., Winn, J. N., and 7 colleagues 2018, “The California-Kepler Survey. IV. Metal-rich Stars Host a Greater Diversity of Planets”, *The Astronomical Journal*, 155, 89. [\[ADS\]](#).
13. **Petigura, E. A.**, Crossfield, I. J. M., Isaacson, H., and 10 colleagues 2018, “Planet Candidates from K2 Campaigns 5-8 and Follow-up Optical Spectroscopy”, *The Astronomical Journal*, 155, 21. [\[ADS\]](#).
14. Weiss, L. M., Marcy, G. W., **Petigura, E. A.**, and 10 colleagues 2018, “The California-Kepler Survey. V. Peas in a Pod: Planets in a Kepler Multi-planet System Are Similar in Size and Regularly Spaced”, *The Astronomical Journal*, 155, 48. [\[ADS\]](#).
15. Winn, J. N., **Petigura, E. A.**, Morton, T. D., and 8 colleagues 2017, “Constraints on the Obliquities of Kepler Planet-hosting Stars”, *The Astronomical Journal*, 154, 270. [\[ADS\]](#).
16. **Petigura, E. A.**, Howard, A. W., Marcy, G. W., and 12 colleagues 2017, “The California-Kepler Survey. I. High-resolution Spectroscopy of 1305 Stars Hosting Kepler Transiting Planets”, *The Astronomical Journal*, 154, 107. [\[ADS\]](#).
17. Johnson, J. A., **Petigura, E. A.**, Fulton, B. J., and 11 colleagues 2017, “The California-Kepler Survey. II. Precise Physical Properties of 2025 Kepler Planets and Their Host Stars”, *The Astronomical Journal*, 154, 108. [\[ADS\]](#).
18. Fulton, B. J., **Petigura, E. A.**, Howard, A. W., and 10 colleagues 2017, “The California-Kepler Survey. III. A Gap in the Radius Distribution of Small Planets”, *The Astronomical Journal*, 154, 109. [\[ADS\]](#).

19. Sinukoff, E., Howard, A. W., **Petigura, E. A.**, and 20 colleagues 2017, “K2-66b and K2-106b: Two Extremely Hot Sub-Neptune-size Planets with High Densities”, *The Astronomical Journal*, 153, 271. [\[ADS\]](#).
20. **Petigura, E. A.**, Sinukoff, E., Lopez, E. D., and 12 colleagues 2017, “Four Sub-Saturns with Dissimilar Densities: Windows into Planetary Cores and Envelopes”, *The Astronomical Journal*, 153, 142. [\[ADS\]](#).
21. David, T. J., **Petigura, E. A.**, Hillenbrand, L. A., and 14 colleagues 2017, “A Transient Transit Signature Associated with the Young Star RIK-210”, *The Astrophysical Journal*, 835, 168. [\[ADS\]](#).
22. Yee, S. W., **Petigura, E. A.**, and von Braun, K. 2017, “Precision Stellar Characterization of FGKM Stars using an Empirical Spectral Library”, *The Astrophysical Journal*, 836, 77. [\[ADS\]](#).
23. Sinukoff, E., Howard, A. W., **Petigura, E. A.**, and 19 colleagues 2017, “Mass Constraints of the WASP-47 Planetary System from Radial Velocities”, *The Astronomical Journal*, 153, 70. [\[ADS\]](#).
24. Benneke, B., Werner, M., **Petigura, E.**, and 13 colleagues 2017, “Spitzer Observations Confirm and Rescue the Habitable-zone Super-Earth K2-18b for Future Characterization”, *The Astrophysical Journal*, 834, 187. [\[ADS\]](#).
25. Crossfield, I. J. M., Ciardi, D. R., **Petigura, E. A.**, and 41 colleagues 2016, “197 Candidates and 104 Validated Planets in K2’s First Five Fields”, *The Astrophysical Journal Supplement Series*, 226, 7. [\[ADS\]](#).
26. Sinukoff, E., Howard, A. W., **Petigura, E. A.**, and 14 colleagues 2016, “Eleven Multiplanet Systems from K2 Campaigns 1 and 2 and the Masses of Two Hot Super-Earths”, *The Astrophysical Journal*, 827, 78. [\[ADS\]](#).
27. David, T. J., Hillenbrand, L. A., **Petigura, E. A.**, and 10 colleagues 2016, “A Neptune-sized transiting planet closely orbiting a 5-10-million-year-old star”, *Nature*, 534, 658. [\[ADS\]](#).
28. **Petigura, E. A.**, Howard, A. W., Lopez, E. D., and 11 colleagues 2016, “Two Transiting Low Density Sub-Saturns from K2”, *The Astrophysical Journal*, 818, 36. [\[ADS\]](#).
29. Schlieder, J. E., Crossfield, I. J. M., **Petigura, E. A.**, and 21 colleagues 2016, “Two Small Temperate Planets Transiting Nearby M Dwarfs in K2 Campaigns 0 and 1”, *The Astrophysical Journal*, 818, 87. [\[ADS\]](#).
30. **Petigura, E. A.**, Schlieder, J. E., Crossfield, I. J. M., and 11 colleagues 2015, “Two Transiting Earth-size Planets Near Resonance Orbiting a Nearby Cool Star”, *The Astrophysical Journal*, 811, 102. [\[ADS\]](#).
31. Crossfield, I. J. M., **Petigura, E.**, Schlieder, J. E., and 24 colleagues 2015, “A Nearby M Star with Three Transiting Super-Earths Discovered by K2”, *The Astrophysical Journal*, 804, 10. [\[ADS\]](#).
32. **Petigura, E. A.** 2015, “Prevalence of Earth-size Planets Orbiting Sun-like Stars”, *Ph.D. Thesis*, [\[ADS\]](#).
33. Marcy, G. W., Weiss, L. M., **Petigura, E. A.**, and 3 colleagues 2014, “Occurrence and core-envelope structure of 1-4× Earth-size planets around Sun-like stars”, *Proceedings of the National Academy of Science*, 111, 12655. [\[ADS\]](#).
34. **Petigura, E. A.**, Howard, A. W., and Marcy, G. W. 2013, “Prevalence of Earth-size planets orbiting Sun-like stars”, *Proceedings of the National Academy of Science*, 110, 19273. [\[ADS\]](#).
35. van Dyk, S. D., **Petigura, E. A.**, Cenko, S. B., and 7 colleagues 2013, “The Probable Progenitor of PSN J01364816+1545310 in M74”, *The Astronomer’s Telegram*, 5229, 1. [\[ADS\]](#).
36. **Petigura, E. A.**, Marcy, G. W., and Howard, A. W. 2013, “A Plateau in the Planet Population below Twice the Size of Earth”, *The Astrophysical Journal*, 770, 69. [\[ADS\]](#).
37. **Petigura, E. A.** and Marcy, G. W. 2012, “Identification and Removal of Noise Modes in Kepler Photometry”, *Publications of the Astronomical Society of the Pacific*, 124, 1073. [\[ADS\]](#).
38. **Petigura, E. A.** and Marcy, G. W. 2011, “Carbon and Oxygen in Nearby Stars: Keys to Protoplanetary Disk Chemistry”, *The Astrophysical Journal*, 735, 41. [\[ADS\]](#).