rodrigo **luger**

coordinates

rodluger@gmail.com

github.com/rodluger

luger.dev

+1 (610) 675 6056

Center for Computational Astrophysics, NY

about

I am a postdoctoral fellow at the Center for Computational Astrophysics in New York City, working on finding novel ways to discover and characterize exoplanets. I am broadly interested in exocartography, astrostatistics, noise modeling, & general analytic techniques for astronomy. Outside of the office I love to hike, cycle, swim, craft lattes, faulty parallelism, and Oxford commas.

stats

Total Pubs	**35**
Refereed	**30**
First Author	**10**
Citations	**1326**
h-index	**17**

popular code

`starry`
Analytic light curves

`planetplanet`
P-P occultations

`everest`
K2 de-trending

education

2012–2017 **PhD** Astronomy and Astrobiology — University of Washington, Seattle WA
+ On the evolution, detection, and characterization of small planets in the habitable zones of M dwarfs
+ Advised by Eric Agol, Rory Barnes, and Victoria Meadows

2012–2013 **MSc** Astronomy and Astrobiology — University of Washington, Seattle WA

2006–2010 **BA** Astrophysics — Swarthmore College, Swarthmore PA
+ Minor in English Literature

positions

2018– **Flatiron Fellow** — Center for Computational Astrophysics, New York, NY
+ Develop and maintain the `starry` light curve modeling code
+ Develop methods to detect & characterize exoplanets with TESS and JWST

2017–2018 **Postdoctoral Researcher** — University of Washington
+ Developed photometric de-trending methods to aid in the search for small planets transiting small stars; developed and maintained the `everest` pipeline

2012–2017 **Research Associate** — University of Washington
+ Developed techniques to detect and characterize habitable zone planets
+ Investigated the atmospheric evolution of planets orbiting M dwarfs

2008–2009 **Student Researcher** — Swarthmore College
+ Research under Professor Eric Jensen on planet formation and T Tauri disks

honors

2018–2021 **Flatiron Fellowship** — Center for Computational Astrophysics, New York, NY

2018 **Hubble Postdoctoral Fellowship** — (Declined)

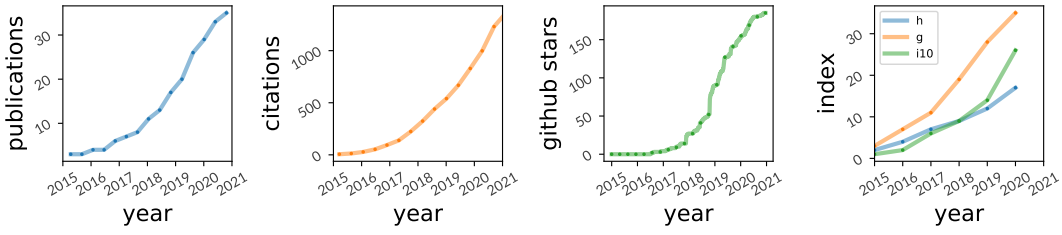
2018 **51 Pegasi b Fellowship** — (Declined)

2012–2015 **ARCS Fellowship** — University of Washington

2010 **Bobby Berman Memorial Prize** — Swarthmore College

2010 **The Phi Beta Kappa Society** — Swarthmore College

metrics



references

eric agol
agol@uw.edu

david w. hogg
dhogg@flatironinstitute.org

dan foreman-mackey
foreman.mackey@gmail.com

rory barnes
rory@astro.washington.edu

teaching & outreach

2020- **Mentor, Simons-NSBP Program** — Flatiron Institute
+ Mentor black undergraduate students through the Simons-National Society of Black Physicists summer program

2019- **Mentor, AstroCom** — AMNH / CUNY
+ Mentor undergraduate students from underrepresented groups in the sciences at the City University of New York

2019- **Lecturer, LSST Data Science Fellowship** — Carnegie Mellon / Flatiron Institute
+ Lectured on various topics related to statistical inference at week-long schools for early-career astronomers

2012–2017 **Mobile Planetarium** — University of Washington
+ Presented planetarium shows at schools and public venues throughout Washington state using UW's inflatable mobile planetarium

2012–2013 **Teaching Assistant** — University of Washington
+ Taught two bi-weekly tutorial sessions for two college astronomy courses

2010–2012 **High School Teacher** — St. Luke's School, New Canaan CT
+ Created and taught a rigorous, college-level elective course in astrophysics aimed at seniors interested in pursuing college classes in the field
+ Taught three sections of 11th grade physics with a focus on astronomy , helping students develop critical thinking and creative problem solving skills

2009–2010 **Science Associate & Tutor** — Swarthmore College
+ Directed weekly large-group study sessions for an introductory course in astronomy; tutored students in courses in mechanics and E&M

other

2013–2017 **IT Manager** — Virtual Planet Laboratory, University of Washington
+ Managed VPL's virtual conferencing system and network

2010–2012 **Head Coach** — St. Luke's School, New Canaan CT
+ Head coach of the JV Boys Soccer and Fencing Teams
+ Assistant coach of the MS Tennis Team

2009–2010 **Captain** — Swarthmore College Fencing Team
+ Captain and founding member of the Sabre Team

publications

citations ⟶
(refereed in **bold**)

– Zinn, J., Stello, D., Elsworth, Y., García, R., et al. (including **Luger, R.**), 2020, The K2 Galactic Archaeology Program Data Release 2: Asteroseismic Results From Campaigns 4, 6, and 7, The Astrophysical Journal Supplement Series, **251**, 23

3 Agol, E., Dorn, C., Grimm, S., Turbet, M., et al. (including **Luger, R.**), 2020, Refining the Transit Timing and Photometric Analysis of TRAPPIST-1: Masses, Radii, Densities, Dynamics, and Ephemerides, arXiv e-prints

8 Cunningham, E., Garavito-Camargo, N., Deason, A., Johnston, K., et al. (including **Luger, R.**), 2020, Quantifying the Stellar Halo's Response to the LMC's Infall With Spherical Harmonics, ApJ, **898**, 4

10 Fleming, D., Barnes, R., **Luger, R.**, & VanderPlas, J., 2020, On the XUV Luminosity Evolution of TRAPPIST-1, ApJ, **891**, 155

15 Agol, E., **Luger, R.**, & Foreman-Mackey, D., 2020, Analytic Planetary Transit Light Curves and Derivatives for Stars With Polynomial Limb Darkening, AJ, **159**, 123

7 Montet, B., Feinstein, A., **Luger, R.**, Bedell, M., et al., 2020, The Young Planet DS Tuc Ab Has a Low Obliquity, AJ, **159**, 112

11 Barnes, R., **Luger, R.**, Deitrick, R., Driscoll, P., et al., 2020, VPLanet: The Virtual Planet Simulator, PASP, **132**, 24502

22 David, T., Petigura, E., **Luger, R.**, Foreman-Mackey, D., et al., 2019, Four Newborn Planets Transiting the Young Solar Analog V1298 Tau, ApJ, **885**

12 Bedell, M., Hogg, D., Foreman-Mackey, D., Montet, B., & **Luger, R.**, 2019, WOBBLE: A Data-Driven Analysis Technique for Time-Series Stellar Spectra, AJ, **158**, 164

36 Feinstein, A., Montet, B., Foreman-Mackey, D., Bedell, M., et al. (including **Luger, R.**), 2019, Eleanor: An Open-Source Tool for Extracting Light Curves From the TESS Full-Frame Images, PASP, **131**, 94502

14 Kruse, E., Agol, E., **Luger, R.**, & Foreman-Mackey, D., 2019, Detection of Hundreds of New Planet Candidates and Eclipsing Binaries in K2 Campaigns 0-8, The Astrophysical Journal Supplement Series, **244**, 11

15 Fleming, D., Barnes, R., Davenport, J., & **Luger, R.**, 2019, Rotation Period Evolution in Low-Mass Binary Stars: The Impact of Tidal Torques and Magnetic Braking, ApJ, **881**, 88

49 Eastman, J., Rodriguez, J., Agol, E., Stassun, K., et al. (including **Luger, R.**), 2019, EXOFASTv2: A Public, Generalized, Publication-Quality Exoplanet Modeling Code, arXiv e-prints

1 Kislyakova, K., Fossati, L., Shulyak, D., Günther, E., et al. (including **Luger, R.**), 2019, Detecting Volcanically Produced Tori Along Orbits of Exoplanets Using UV Spectroscopy, arXiv e-prints

21 Kreidberg, L., **Luger, R.**, & Bedell, M., 2019, No Evidence for Lunar Transit in New Analysis of Hubble Space Telescope Observations of the Kepler-1625 System, ApJ, **877**

– Saunders, N., **Luger, R.**, & Barnes, R., 2019, The Pointing Limits of Transiting Exoplanet Light Curve Characterization With Pixel Level Decorrelation, AJ, **157**, 197

9 **Luger, R.**, Bedell, M., Vanderspek, R., & Burke, C., 2019, TESS Photometric Mapping of a Terrestrial Planet in the Habitable Zone: Detection of Clouds, Oceans, and Continents, arXiv e-prints

45 **Luger, R.**, Agol, E., Foreman-Mackey, D., Fleming, D., et al., 2019, Starry: Analytic Occultation Light Curves, AJ, **157**, 64

– Barnes, R., **Luger, R.**, Smotherman, H., Deitrick, R., & Fleming, D., 2019, After the Habitable Zone, Memorie della Societa Astronomica Italiana, **90**, 641

14 Lustig-Yaeger, J., Meadows, V., Tovar Mendoza, G., Schwieterman, E., et al. (including **Luger, R.**), 2018, Detecting Ocean Glint on Exoplanets Using Multiphase Mapping, AJ, **156**, 301

46 Lincowski, A., Meadows, V., Crisp, D., Robinson, T., et al. (including **Luger, R.**), 2018, Evolved Climates and Observational Discriminants for the TRAPPIST-1 Planetary System, ApJ, **867**, 76

81 **Luger, R.**, Kruse, E., Foreman-Mackey, D., Agol, E., & Saunders, N., 2018, An Update to the EVEREST K2 Pipeline: Short Cadence, Saturated Stars, and Kepler-Like Photometry Down to Kp = 15, AJ, **156**, 99

20 Fleming, D., Barnes, R., Graham, D., **Luger, R.**, & Quinn, T., 2018, On the Lack of Circumbinary Planets Orbiting Isolated Binary Stars, ApJ, **858**, 86

9 Tian, F., Güdel, M., Johnstone, C., Lammer, H., et al. (including **Luger, R.**), 2018, Water Loss From Young Planets, Space Science Reviews, **214**, 65

91 Meadows, V., Arney, G., Schwieterman, E., Lustig-Yaeger, J., et al. (including **Luger, R.**), 2018, The Habitability of Proxima Centauri B: Environmental States and Observational Discriminants,

Astrobiology, **18**, 133

19 **Luger, R.**, Lustig-Yaeger, J., & Agol, E., 2017, Planet-Planet Occultations in TRAPPIST-1 and Other Exoplanet Systems, ApJ, **851**, 94

6 **Luger, R.**, Foreman-Mackey, D., & Hogg, D., 2017, Linear Models for Systematics and Nuisances, Research Notes of the American Astronomical Society, **1**, 7

166 **Luger, R.**, Sestovic, M., Kruse, E., Grimm, S., et al., 2017, A Seven-Planet Resonant Chain in TRAPPIST-1, Nature Astronomy, **1**, 129

23 **Luger, R.**, Lustig-Yaeger, J., Fleming, D., Tilley, M., et al., 2017, The Pale Green Dot: A Method to Characterize Proxima Centauri B Using Exo-Aurorae, ApJ, **837**, 63

151 **Luger, R.**, Agol, E., Kruse, E., Barnes, R., et al., 2016, EVEREST: Pixel Level Decorrelation of K2 Light Curves, AJ, **152**, 100

49 Barnes, R., Deitrick, R., **Luger, R.**, Driscoll, P., et al., 2016, The Habitability of Proxima Centauri B I: Evolutionary Scenarios, arXiv e-prints

61 Schwieterman, E., Meadows, V., Domagal-Goldman, S., Deming, D., et al. (including **Luger, R.**), 2016, Identifying Planetary Biosignature Impostors: Spectral Features of CO and O_4 Resulting From Abiotic O_2/O_3 Production, ApJ, **819**

226 **Luger, R.**, & Barnes, R., 2015, Extreme Water Loss and Abiotic O_2 Buildup on Planets Throughout the Habitable Zones of M Dwarfs, Astrobiology, **15**, 119

75 **Luger, R.**, Barnes, R., Lopez, E., Fortney, J., et al., 2015, Habitable Evaporated Cores: Transforming Mini-Neptunes Into Super-Earths in the Habitable Zones of M Dwarfs, Astrobiology, **15**, 57

11 Deitrick, R., Barnes, R., McArthur, B., Quinn, T., et al. (including **Luger, R.**), 2015, The Three-Dimensional Architecture of the υ Andromedae Planetary System, ApJ, **798**, 46

selected talks

Luger, R., Toward Maps of Exoplanet Surfaces, University of British Columbia, Vancouver, Canada, April 12, 2020

Luger, R., Lots of Fun With TRAPPIST-1, Stanford KIPAC Tea, Stanford, CA, February 07, 2020

Luger, R., Toward Maps of Exoplanet Surfaces, Stanford Astrophysics Colloquium, Stanford, CA, February 06, 2020

Luger, R., Toward Maps of Exoplanet Surfaces, Oxford Physics Department Seminar, Oxford, UK, January 15, 2020

Luger, R., Toward Maps of Exoplanet Surfaces, Yale University Exoplanet Journal Club, New Haven, CT, October 08, 2019

Luger, R., Toward Maps of Exoplanet Surfaces, Villanova University Astronomy Department Colloquium, Villanova, PA, September 20, 2019

Luger, R., Regularization and Ridge Regression, LSSTC Data Science Fellowship Program, New York, NY, September 12, 2019

Luger, R., An Introduction to Gaussian Process Regression, LSSTC Data Science Fellowship Program, Pittsburgh, PA, June 08, 2019

Luger, R., Gradient-based Inference Techniques for Exoplanet Light Curves, Kepler Science Conference V, Glendale, CA, March 05, 2019

Luger, R., Agol, E., Foreman-Mackey, D., Fleming, D., & others, STARRY: Analytic Occultation and Rotation Light Curves, TESS Data Workshop, Baltimore, MD, February 11, 2019

Luger, R., Lustig-Yaeger, J., & Agol, E., Probing the TRAPPIST-1 System with K2, JWST, and Be-

yond, AAS Meeting 231, **410.02**, National Harbor, MD, January 2018

Luger, R., Lustig-Yaeger, J., & Agol, E., Probing the TRAPPIST-1 System with Planet-Planet Occultations, Stars & Planets Seminar, Center for Astrophysics, Cambridge, MA, October 30, 2017

Luger, R., Lustig-Yaeger, J., & Agol, E., Probing the TRAPPIST-1 System with Planet-Planet Occultations, Dept. Colloquium, Penn State University, State College, PA, September 11, 2017

Luger, R., Kruse, E., Foreman-Mackey, D., Agol, E., & others, EVEREST Tutorial and Workshop, Kepler Science Conference IV, Mountain View, CA, June 21, 2017

Luger, R., Sestovic, M., Kruse, E., Grimm, S., & others, TRAPPIST-1: A Seven-Planet Resonant Chain Unveiled by K2, Kepler Science Conference IV, Mountain View, CA, June 21, 2017

Luger, R., Barnes, R., Deitrick, R., & others, Evolution of the Water Content of Proxima Centauri b, Astrobiology Science Conference, **3534**, Mesa, AZ, April 28, 2017

Luger, R., Kruse, E., Foreman-Mackey, D., Agol, E., & others, Habitable Zone Planets with K2, Astrobiology Science Conference, **3338**, Mesa, AZ, April 26, 2017

Luger, R., & Barnes, R., Extreme Water Loss and Abiotic O_2 Buildup on Planets Throughout the Habitable Zones of M Dwarfs, AAS Meeting 225, **407.04**, Seattle, WA, January 2015

Luger, R., Barnes, R., Lopez, E., Fortney, J., & others, Habitable Evaporated Cores: Converting Mini-Neptunes into Super-Earths in the Habitable Zone of M Dwarfs, AAS Meeting 223, **325.05**, National Harbor, MD, January 2014