rodrigo **luger**

coordinates

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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	**49**
Refereed	**41**
First Author	**15**
Citations	**2164**
h-index	**24**

references

eric agol
agol@uw.edu

david w. hogg
dhogg@flatironinstitute.org

rory barnes
rory@astro.washington.edu

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
- Work on statistical and computational data analysis problems applied to stellar and exoplanetary astronomy
- Develop algorithms and open-source software for timeseries analysis

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

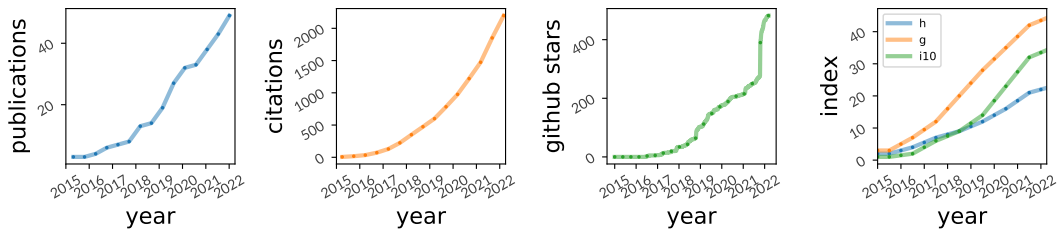
2012–2017 **Research Associate** — University of Washington
- Developed techniques to detect and characterize habitable zone planets
- Investigated the atmospheric evolution of planets orbiting M dwarfs

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

honors

2018–2022	**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



links

LSST Lecture I
LSST Worksheet I
LSST Lecture II
LSST Worksheet II

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

students

2020– **Shashank Dholakia** University of California, Berkeley
— Developing analytic transit light curve models for oblate stars

2020– **Shishir Dholakia** University of California, Berkeley
— Developing analytic transit light curve models for oblate stars

2020–2021 **Rebecca Young** Simons-NSBP Scholars Program, CCA
— Inferring differential rotation rates from Kepler light curves

2020– **Fran Bartolić** Pre-doctoral Program, CCA
— Mapping the surface of Io from Jupiter occultation data

2019– **Asmaa Elsayed** AstroCom Program, CUNY/CCA
— Understand the time evolution of spotted stellar surfaces

2019 **Brynner Hidalgo** AstroCom Program, CUNY/CCA
— Understand the time evolution of spotted stellar surfaces

2016–2018 **Nicholas Saunders** University of Washington
— Develop tools to mitigate systematics in K2 data

other

2018– **Organizer, Stars and Exoplanets Meeting** CCA
— Organize weekly meeting for NYC area graduate students, postdocs, & faculty

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

popular software

primary developer

secondary developer

starry `pip install starry`
— Tools for light curve modeling & mapping stars and planets

starry-process `pip install starry-process`
— Gaussian processes for modeling stellar variability

showyourwork `github.com/rodluger/showyourwork`
— A workflow for open source, reproducible scientific articles

planetplanet `pip install planetplanet`
— Tools for modeling planet-planet occultations

everest `pip install everest-pipeline`
— Tools for de-trending K2 light curves

exoplanet `pip install exoplanet`
— Tools for probabilistic modeling of exoplanet time series data

VPLANET `pip install vplanet`
— Suite for simulating planetary system evolution and habitability

selected talks

: Downloadable
: Watchable

Stellar Variability as a Statistical Process, Department Colloquium, Institut fur Astrophysik Goettingen, November 18, 2021

An Introduction to Gaussian Process Regression, LSSTC Data Science Fellowship Program, Online, October 05, 2021

Signal or Noise: My love-hate relationship with stellar variability, University of Michigan Astronomy Department Colloquium, Ann Arbor, MI, September 23, 2021

Linear Models for TESS Systematics, TESS Science Conference II, Online, August 05, 2021

A Bunch of Random Things I'm Working On (don't worry, they're all related to spherical harmonics), Center for Computational Astrophysics Lunch Talk, New York, NY, April 29, 2021

Gaussian Processes for Stellar Variability, University of New South Wales AstroSeminar, Sydney, Australia, February 03, 2021

Gaussian Processes for Stellar Variability, Center for Computational Astrophysics Lunch Talk, New York, NY, November 05, 2020

Toward Maps of Exoplanet Surfaces, University of British Columbia Astronomy Seminar, Vancouver, Canada, April 12, 2020

Toward Maps of Exoplanet Surfaces, American Museum of Natural History Astronomy Colloquium, New York, NY, March 10, 2020

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

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

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

Surface Maps of Stars and Exoplanets, AAS Meeting 235, **132.01**, Honolulu, HI, January 2020

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

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

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

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

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

STARRY: Analytic Occultation and Rotation Light Curves, TESS Data Workshop, Baltimore, MD, February 11, 2019

Probing the TRAPPIST-1 System with K2, JWST, and Beyond, AAS Meeting 231, **410.02**, National Harbor, MD, January 2018

Probing the TRAPPIST-1 System with Planet-Planet Occultations, Stars & Planets Seminar, Center for Astrophysics, Cambridge, MA, October 30, 2017

Probing the TRAPPIST-1 System with Planet-Planet Occultations, Dept. Colloquium, Penn State University, State College, PA, September 11, 2017

On the Evolution, Detection, and Characterization of Small Planets in the Habitable Zones of Low Mass Stars, Dissertation Talk, Seattle, WA, August 11, 2017

EVEREST Tutorial and Workshop, Kepler Science Conference IV, Mountain View, CA, June 21, 2017

TRAPPIST-1: A Seven-Planet Resonant Chain Unveiled by K2, Kepler Science Conference IV, Mountain View, CA, June 21, 2017

Evolution of the Water Content of Proxima Centauri b, Astrobiology Science Conference, **3534**, Mesa, AZ, April 28, 2017

Habitable Zone Planets with K2, Astrobiology Science Conference, **3338**, Mesa, AZ, April 26, 2017

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

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