

GABRIELLE ENGELMANN-SUISSA

NASA GODDARD SPACE FLIGHT CENTER

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EDUCATION

COLUMBIA UNIVERSITY Fall 2015 – Spring 2019

Bachelor of Arts in Astrophysics

Cumulative GPA: 3.61, Dean's list for Fall 2016 – Fall 2018

CURRENT EMPLOYMENT

VISITING RESEARCH ASSISTANT NASA Goddard Space Flight Center, July 2019 - Present

Advisors: Dr. Avi Mandell & Dr. Ravi Kopparapu

Currently working as a full-time research assistant employed by the Goddard Earth Sciences Technology and Research (GESTAR)/Universities Space Research Association. Jointly working under the Planetary Systems Laboratory and the Planetary Environments Laboratory to understand how GCM simulations of exoplanets inform our understanding of how detectable aquaplanets, sub-neptunes, Archean-Earths, and early-Mars-like planets are with next generation telescope capabilities.

RESEARCH EXPERIENCE

CENTER FOR ASTROBIOLOGY NASA Goddard Space Flight Center, Summer 2018

Advisor: Dr. Avi Mandell

Accepted into Goddard's Undergraduate Research Associates in Astrobiology program. Simulated exoplanet transmission spectroscopy for ocean-covered Earth-like planets synchronously rotating M- and K-type stars. Used GCMs as inputs to radiative transfer model in order to create and analyze spectra. Conducted exposure time calculations for TESS targets based on spectral trends. Presented findings to the NASA Astrobiology Institute.

COOL WORLDS LAB Columbia University, Summer 2017 – Spring 2018

Advisor: Professor David Kipping

Constructed model to constrain core sizes of rocky exoplanets by exploiting boundary conditions. Parametrically interpolated two-layer interior models. Created and released public code (**HARDCORE**) capable of calculating the minimum and maximum core radius fraction given just planetary mass and radius.

PUBLICATIONS

Suissa, G., Wolf, E., Kopparapu, R., Villanueva, G., Mandell, A., Fauchez, T., Arney, G., et al., 2019, Climate States and Observable Prospects for a Habitable Zone Planet. Submitted to ApJ.

Suissa, G., Mandell, A., Wolf, E., Villanueva, G., Fauchez, T., and Kopparapu, R., 2019, Dim Prospects for Transmission Spectra of Ocean Earths Around M Stars. In review for ApJ.

Suissa, G. and Kipping, D., 2018, Trappist-1e Has a Large Iron Core, RNAAS, 2, 2, 31.

Suissa, G., Chen, J., and Kipping, D., 2018, A HARDCORE model for constraining an exoplanet's core size, MNRAS, 476, 2613.

PRESENTATIONS

Professional and Public Talks:

- *Dim Prospects for Water Vapor Detection on Ocean Earths Around M Stars*. Invited speaker at Exoplanet Group Meeting, November 2019, University of Chicago.
- *Using GCM Outputs to Model Transmission Spectroscopy for Anticipated Aqua-Earths*. SEEC Symposium, November 2019, NASA Goddard Space Flight Center.

- *Modeling Transit Spectra For M-Star Aqua-Earths Using GCMs*. Chesapeake Bay Area Exoplanet Meeting, September 2019, University of Delaware.
- *Synchronously Rotating Ocean Earths Around Cool Stars: What To Expectra*. AAS Meeting #233, Extrasolar Planets: Characterization & Theory Track 1: XII. Toward Terrestrial Exoplanet Characterization, January 2019, Seattle, Washington
- *Ocean Worlds Around Cool Stars: What to ExPECTRA*. BlueShift Undergraduate Research Presentation, September 2018, Columbia University.
- *Ocean Worlds Around M Stars: What to ExPECTRA*. NASA Astrobiology Institute, August 2018, NASA Goddard Space Flight Center.
- *A hardcore model for exoplanets*. "Arts and Astro" outreach event, March 2018, Columbia University.

Poster Presentations:

- **Suissa, G.**, Mandell, A., Villanueva, G., Kopparapu, R., and Wolf, E. (2019). *Ocean Worlds Around Cool Stars: What to ExPECTRA*. Ocean Worlds Science and Technology Poster Fair, NASA Goddard Space Flight Center.
- **Suissa, G.**, Mandell, A., Villanueva, G., Kopparapu, R., and Wolf, E. (2018). *Ocean Worlds Around Cool Stars: What to ExPECTRA*. NYU/AMNH/CUNY AstroFest 2018, NYU Center for Cosmology and Particle Physics, New York, NY.
- **Suissa, G.**, Mandell, A., Villanueva, G., Kopparapu, R., and Wolf, E. (2018). *Ocean Worlds Around Cool Stars: What to ExPECTRA*. AstroFest 2018, Columbia University Department of Astronomy, New York, NY.
- **Suissa, G.**, Chen, J., and Kipping, D. (2018). *A hardcore model for constraining an exoplanet's core size*. January 2018, 231st American Astronomical Society Winter Meeting, National Harbor, MD.
- **Suissa, G.**, Chen, J., and Kipping, D. (2018). *A hardcore model for constraining an exoplanet's core size*. Science Research Symposia 2018, Columbia University, New York, NY.
- **Suissa, G.**, Chen, J., and Kipping, D. (2017). *A hardcore model for minimum core size of solid exoplanets*. AstroFest 2017, Columbia University Department of Astronomy, New York, NY.

AWARDS

JOHN MATHER NOBEL SCHOLAR 2018 – Present

COLUMBIA ASTROFEST FIRST PLACE POSTER AWARD 2018

JEWISH FAMILY AND CHILDREN'S SERVICES SCHOLARSHIP FUND 2015 – 2019

ACTIVITIES

COLUMBIA ASTROBIOLOGY CENTER Manager (Fall 2018 – Spring 2019)

- Worked alongside CAC director Dr. Caleb Scharf to strengthen the planetary science and astrobiology community in New York.
- Organized regular meetings and research talks to encourage interdisciplinary collaboration between researchers at Columbia University, the Columbia Medical Center, Lamont-Doherty Earth Observatory, NASA GISS, and the American Museum of Natural History.

BLUESHIFT Columbia's Undergraduate Astronomy Organization (Spring 2017 – Spring 2019)

- Served as president and later senior advisor for undergraduate club that fosters research, education, and dialogue in astronomy.
- Used leadership and organizational skills to create agendas, facilitate meetings, and plan events such as regular research presentations, advising sessions, journal clubs, observing trips, and outreach events.
- Fostered a community atmosphere that emphasized mentorship between undergraduates, graduate students, and faculty within the Department of Astronomy.

SKILLS

PYTHON Statistics, data reduction, model selection

RADIATIVE TRANSFER Planetary Spectrum Generator

GENERAL CIRCULATION MODELS ExoCam, ROCKE-3D

PREVIOUS EMPLOYMENTS

COLUMBIA ASTRONOMY DEPARTMENT GRADER Spring 2018, Spring 2019

PHILADELPHIA SAT PREP PROGRAM INSTRUCTOR Summer 2015 – Summer 2017

PROFESSIONAL MEMBERSHIPS

American Astronomical Society, AAS Division for Planetary Sciences.