

Jonathan (Yoni) Brande - jbrande@ku.edu

Education

- Current PhD Student, University of Kansas, Department of Physics and Astronomy
- BS, Astronomy, with Computer Science minor, University of Maryland, College Park, Dec. 2017

Research and Employment

- 2020 - present - PhD Student - University of Kansas Department of Physics and Astronomy
 - Transiting exoplanet characterization through transmission spectroscopy. Current work includes HST/WFC3 and IRTF/iSHELL spectroscopy. Developing improved HST/WFC3 systematics models to detrend raw data. Advisor: Dr. Ian Crossfield
 - Fall 2020 - Graduate TA for intro physics labs. Supervisor: Prof. Jennifer Delgado
- 2018 - 2020 - NASA GSFC, Planetary Systems Lab, Exoplanets and Stellar Astrophysics Lab/University of Maryland, Dept. of Astronomy - Faculty Research Assistant -
 - Exoplanet tool development and validation for the Exoplanet Modeling and Analysis Center. The EMAC project is currently deployed as a community resource¹. Advisor - Dr. Avi Mandell
 - Simulated the feasibility of using JWST/MIRI for direct imaging of gaseous planets around nearby M-dwarfs. Advisors - Dr. Thomas Barclay, Dr. Elisa Quintana
 - TESS planet discovery and characterization with lightcurve modeling and transit timing variation analyses of TESS targets, including the L98-59 system². Advisors - Dr. Thomas Barclay, Dr. Elisa Quintana
- 2017 - Summer/Fall - 2018 Spring - University of Maryland, Department of Astronomy -
 - Efficient algorithms for representing the complex gravity fields of asteroids using analytic evaluations of the gravity of cubic mass elements. Advisor - Prof. Doug Hamilton
 - Astronomy Education Tools - Also produced a 3-D orbital visualization tool for the Department's Astronomy Workshop website, to support Dr. Hamilton's astronomy education efforts³.
- 2017 - Spring/Fall Semesters - Undergraduate Tutoring Coordinator - University of Maryland, Department of Astronomy -
 - 4 hours/wk tutoring, acting tutor/faculty liaison, scheduled student tutoring hours.
- 2016 - Summer - NASA Space Grant Intern, Harvard/Smithsonian Center for Astrophysics, Chandra X-Ray Observatory Operations Controls Center - Supervisor - Mark Baski
 - Developed 3D web telemetry display to allow at-a-glance health and status diagnostics of Chandra spacecraft. Currently in use at Chandra Operations Control.
- 2013-15 - Summers - Assistant Programmer, Engineering and Innovative Technology Development (EITD) Lab, University of Alabama at Birmingham (UAB). Developed telemetry monitoring software to support UAB-developed "Polar" cold stowage hardware⁴ now deployed on ISS via Commercial Resupply Services missions. Supervisor - Lee Moradi

Publications and White Papers

- Gilbert, E. A., et al. (incl. **Brande, J.**), The First Habitable Zone Earth-sized Planet from TESS. I: Validation of the TOI-700 System, 2020, AJ, 160, 3
- **Brande, J.**, Barclay, T., Schlieder, J. E., Lopez, E. D., Quintana, E. V., The Feasibility of Directly Imaging Nearby Cold Jovian Planets with MIRI/JWST. 2020, AJ, 159, 18
- Kostov, V. B., et al. (incl. **Brande, J.**), The L 98-59 System: Three Transiting, Terrestrial-Sized Planets Orbiting a Nearby M-dwarf. 2019, AJ, 158, 32

¹ <https://emac.gsfc.nasa.gov>

² <https://www.nasa.gov/feature/goddard/2019/nasa-s-tess-mission-finds-its-smallest-planet-yet/>

³ <https://janus.astro.umd.edu/orbits/3dview.html>

⁴ http://www.nasa.gov/mission_pages/station/research/news/Space_Saving.html

- Vidaurri, M., Wofford, A., **Brande, J.**, Black-Planas, G., Domagal-Goldman, S., Haqq-Misra, J., Absolute Prioritization of Planetary Protection, Safety, and Avoiding Imperialism in All Future Science Missions: A Policy Perspective. 2019, Astro2020 APC White Paper, BAAS, 51, 276.

Observing Proposals Awarded Time

- 2021 - IRTF 2021A027 - The Helium Exosphere of a TESS-Discovered Warm Neptune - 3 half-nights **(Co-I)**
- 2019 - HST Cycle 27, 15856 - Searching for Secondary Atmospheres in a System of Benchmark Worlds, 28 orbits **(Co-I)**

Presentations and Conference Proceedings

- **Brande, J.**, “Fun With Transmission Spectroscopy”. KU Physics & Astronomy Locally Organized Assembly. Feb. 15-19, 2021
- **Brande, J.**, Barclay, T. Constraining TESS Planet Masses with Transit-Timing Variations, American Astronomical Society, AAS Meeting #235, id. 174.06, 5 January 2020. (Poster)
- **Brande, J.** The First Year of TESS TTVs, SEEC Symposium 2019, Rocky Exoplanets in the Era of JWST, Nov. 4-8 2019 (Poster and Flash Talk)
- **Brande, J.** The First Year of TESS TTVs, TESS Science Conference I, July 29 - Aug 2 2019. (Poster)
- **Brande, J.**, Barclay, T., Lopez, E. D., Quintana, E., The Feasibility of Directly Imaging Cold Planets with MIRI/JWST, American Astronomical Society, AAS Meeting #233, id.402.02, 10 January 2019.
- **Brande, J.**, Barclay, T., Lopez, E. D., Quintana, E., The Feasibility of Directly Imaging Cold Planets with MIRI/JWST, Abstract P41E-3774 presented at 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec. (Poster)
- **Brande, J.**, Barclay, T., Lopez, E. D., Quintana, E., The Feasibility of Directly Imaging Cold Planets with MIRI/JWST. Chesapeake Bay Area Exoplanet Meeting - Space Telescope Science Institute, Johns Hopkins University, Baltimore, MD. Sep. 7, 2018 (Poster)

Invited Talks

- Oct. 16, 2021. “Exoplanet Science With JWST”, Nebraska Physics & Astronomy Summit, UNL, Lincoln, NE
- Oct. 15, 2021. “The Invisible Sky With JWST”, Ruckman Public Lecture, UNL, Lincoln, NE
- Jun. 11, 2021. “Exploring Exoplanets”, At-Home Planetarium Series, Fernbank Science Center, Atlanta, GA.
- Feb. 24, 2020. “Exoplanets @ NASA”, Terrapin Astronomical Society, University of Maryland, College Park.
- February 8, 2019, “The Feasibility of Directly Imaging Cold Planets with MIRI/JWST”, Sciences and Exploration Directorate Director’s Seminar, NASA Goddard Space Flight Center.

Outreach, Professional Service

- Graduate Student Representative to the KU Physics and Astronomy Dept. Assembly, Fall 2021
- Executive Secretary, TESS Cycle 3 GI Panel Review, March 2020
- Local Organizing Committee, SEEC Symposium 2019: “Rocky Exoplanets in the Era of JWST: Theory and Observation”, NASA Goddard Space Flight Center, Nov. 4-8, 2019
- Oct. 5, 2019. International Observe the Moon Night, NASA GSFC. Helped run public telescope observing of the Moon, Jupiter, and Saturn.
- Executive Secretary, 2nd Exoplanets Research Program Panel Review, NASA ROSES 2019
- July 20, 2019. Apollo 50 Festival, National Mall, Washington DC. Volunteered to help conduct public outreach efforts showing GSFC’s Planetary Analog fieldwork in preparation for future solar system exploration missions.
- January 20, 2019, University of Maryland Observatory Open House - University of Maryland. “Planet Hunting with the James Webb Space Telescope”
- August 21, 2017, Great American Eclipse - Camp Ramah Darom, Clayton, GA. Spoke to visiting Atlanta middle school students on eclipse observation and the scientific method. Prompted students for discussion on making predictions of the eclipse’s effects and observing whether those predictions were accurate or not.
- December 5, 2016, University of Maryland Observatory Open House - University of Maryland. Presented original research conducted as part of the Observational Astronomy class curriculum to students, faculty, and community members at the UMD Observatory’s bimonthly open house.