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 and Graduate Teaching Asst. - University of Kansas Dept. Physics and Astronomy
  - Graduate TA for intro physics labs. Supervisor: Prof. Jennifer Delgado
  - Transiting exoplanet characterization through transmission spectroscopy. Advisor: Dr. Ian Crossfield
- 2018 - 2020 - NASA GSFC, Planetary Systems Lab, Exoplanets and Stellar Astrophysics Lab/University of Maryland, Dept. of Astronomy - Faculty Research Assistant -
  - Contributed to the Exoplanet Modeling and Analysis Center by developing exoplanet modeling tools, e.g. developing/refining the exoplanet-specific interface to GSFC's Planetary Spectrum Generator tool and refining and validating intern-developed tools such as the Exoplanet Boundaries Calculator. The EMAC project is currently deployed as a community resource[1]. Advisor - Dr. Avi Mandell
  - Conducted research into the feasibility of using JWST's Mid-Infrared Instrument for direct imaging of gaseous planets around nearby M-dwarfs. Developed generalized frameworks for conducting parallelized JWST simulations on the Goddard Private Cloud computing resource. Advisors - Dr. Thomas Barclay, Dr. Elisa Quintana
  - Contributed to TESS planet discovery and characterization efforts through dynamics, transit timing variation analysis of TESS targets, including the L98-59 system[2]. 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. Worked to develop novel methods for gravitational modeling 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 efforts[3].
- 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 - Summer - Assistant Programmer, Engineering and Innovative Technology Development (EITD) Lab, University of Alabama at Birmingham (UAB). Employed in support of UAB-developed "Polar" cold stowage hardware[4] now deployed on ISS via Commercial Resupply Services missions. Supervisor - Lee Moradi
  - Summer 2015 -
    - Developed iOS mobile application (iPolar) to handle Polar telemetry for live, on-station monitoring. Currently in use for ISS hardware support.
    - Rewrote legacy ground station software to support current Polar operations from EITD.
  - Summer 2014 -
    - Developed lab internal website to show Polar telemetry during hardware testing.
  - Summer 2013 -
    - Developed Android mobile application to show Polar telemetry during hardware testing.

---

[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

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
- 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.

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)

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)**

Outreach, Professional Service

- Feb. 24, 2020. Invited speaker at the Terrapin Astronomical Society, University of Maryland, College Park. "Exoplanets @ NASA"
- 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.
- February 8, 2019, Sciences and Exploration Directorate Director's Seminar - NASA Goddard Space Flight Center. "The Feasibility of Directly Imaging Cold Planets with MIRI/JWST"
- 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.