Jonathan (Yoni) Brande

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https://jbrande.github.io

Education

- BS, Astronomy, with Computer Science minor, University of Maryland, College Park, Dec. 2017

Language Proficiencies

- English (Native)
- Hebrew (Conversational)

Programming Skills

- Proficient: Python (NumPy, SciPy, Matplotlib, Astropy, Astroconda, other astronomical/scientific Python libraries), Java, Javascript (JQuery, D3, Plotly, Three.js), C/C++, MATLAB
- Familiar: OpenGL, Mathematica, C#, Swift, SQL, Ruby, OCaml.

Employment and Research

- 2018 - Present - 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. Contributed to TESS planet discovery and characterization efforts through dynamics analysis of TESS targets, including transit timing variations. 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[2].
- 2017 - Spring/Fall Semesters - Undergraduate Tutoring Coordinator - University of Maryland, Department of Astronomy -
    - Responsible for scheduling student tutoring hours, acting as tutor/faculty liaison to distribute homeworks and solutions, handle faculty suggestions and concerns, as well as 4 hours of weekly tutoring.
- 2016 - Summer - NASA Space Grant Intern, Harvard/Smithsonian Center for Astrophysics, Chandra X-Ray Observatory Operations Controls Center -
    - Employed as software intern on the Chandra Flight Operations Team. Worked with one other intern to develop an interactive 3D web display of the Chandra spacecraft to show meaningful visual representations of spacecraft telemetry. The project's intended use is for spacecraft support and diagnostic operations. Worked with 3D graphics packages including Three.js, WebGL, and Blender. Supervisor - Mark Baski, Software Manager

[1] https://emac.gsfc.nasa.gov

[2] https://janus.astro.umd.edu/orbits/3dview.html

- 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[3] now deployed on ISS via Commercial Resupply Services missions. Supervisor - Lee Moradi
    - Summer 2015 -
        - Developed iOS mobile application to monitor sensors (temperature, electrical, etc.) on, and query data streams from Polar hardware. The application, iPolar, has been deployed on the NASA app store for continuing support and development of Polar cold stowage units. Learned the iOS SDK including Swift and Objective-C.
        - Began rewrite of Windows Forms application to simulate a connection from ground-based computers to hardware deployed onboard ISS. Legacy code had been written in Borland C++ and older versions of .NET. Worked with C++, C#, NET 4.0 and above.
    - Summer 2014 -
        - Designed and wrote an internal company website to display historical temperature data of Polar and allow user interaction with database. Worked with data visualization libraries, JavaScript, jQuery, HTML.
    - Summer 2013 -
        - Developed an Android mobile application to monitor sensors (temperature, electrical, etc.) on, and query data streams from Polar hardware during the testing/development phase. Android SDK, Java

Publications and Conference Proceedings

- **Brande, J.** The First Year of TESS TTVs, TESS Science Conference I, July 29 - Aug 2 2019. (Poster)
- **Brande, J.**, Barclay, T., Schlieder, J. E., Lopez, E. D., Quintana, E. V., The Feasibility of Directly Imaging Cold Jovian Planets with MIRI/JWST (in review, AJ)
- Kostov, V. B., Schlieder, J. E., Barclay, T., Quintana, E. V., Colon, K. D., **Brande, J.**, et al., The L 98-59 System: Three Transiting, Terrestrial-Sized Planets Orbiting a Nearby M-dwarf 2019, AJ, 158, 32
- **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.

Presentations, Outreach, Professional Service

- Member, LOC, SEEC Symposium 2019: "Rocky Exoplanets in the Era of JWST: Theory and Observation", NASA Goddard Space Flight Center, Nov. 4-8, 2019
- August 15, 2019, Goddard Extrasolar Planets Seminar - NASA Goddard Space Flight Center. "The First Year of TESS TTVs"
- 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"
- September 7, 2018, Chesapeake Bay Area Exoplanet Meeting - Space Telescope Science Institute, Johns Hopkins University, Baltimore, MD. "The Feasibility of Directly Imaging Cold Planets with MIRI/JWST" - Flash talk and poster, including discussion with STScI staff involved with JWST simulation tools and future observations.
- 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.

[3] http://www.nasa.gov/mission_pages/station/research/news/Space_Saving.html

Extracurricular Activities

- Ometz - Executive Coordinator - Spring, Fall 2016
    - Oversaw programming efforts as well as planned services, handled budgets, and worked with Hillel administration for the Conservative Jewish student group at the University of Maryland.
- Ometz - General Board - Spring, Fall 2015
    - Participated in planning social and educational programming for the Conservative Jewish student group at the University of Maryland.