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trevorfoote
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Trevor O. Foote

Education

2019-2024 **Astronomy**, *Cornell University*, Ithaca, NY, *Doctor of Philosophy*.

2021 **Astronomy**, *Cornell University*, Ithaca, NY, *Master of Science*.

2019 **Physics**, *Washington State University*, Pullman, WA, *Bachelor of Science Degree*.
With focus on Astrophysics, GPA: 3.72/4.0 *Sigma Cum Laude*

2011 **Civil Engineering**, *Washington State University*, Pullman, WA, *Bachelor of Science Degree*.
With focus on Environmental Engineering, GPA: 3.68/4.0 *Cum Laude*

Relevant Work Experience

Position **Research Assistant**

Lab Lewis Research Group

Advisor Nikole Lewis, Associate Professor of Astronomy

Research Dates *08/2019 - present*

Responsibilities
- Performed data reduction and analysis of *Hubble Space Telescope* secondary eclipse observations of hot Jupiter, WASP-79b
- Mentored undergraduate in the data reduction of *Hubble Space Telescope* observations for the TRAPPIST-1 system that included the dual transits of TRAPPIST-1e and g.
- Conducted a debris analysis for the *Pandora SmallSat* mission, as part of the mission's Concept Study Report and Critical Design Review
- Developed a signal-to-noise calculator that integrated with an online spectrum generator for the *Pandora* mission
- Created a 2D image simulator for the infrared detector (H2RG) on the *Pandora SmallSat* mission
- Developed an open-source Python program for scheduling time-constrained astronomical observations using a meta-heuristic algorithm
- Designed and conducted instrument characterization testing for *Pandora's* infrared detector to ensure the success of the mission's science objectives

Position **Research Lab Assistant**

Lab Saam Laboratory Research Group: Optical Spin Polarization & Magnetic Resonance

Advisor Brian Saam, Professor of Physics & Department Chair

Research Dates *08/2017 - 06/2019*

Responsibilities
- Assisted in the layout and set-up of two research laboratories, including coding and launching of public laboratory research website
- Constructed high-vacuum system used for creating alkaline-metal-noble gas cells for use in Spin Exchange Optical Pumping (SEOP) research
- Designed and constructed optics train to couple laser light into fiber optic for use in optical spectrum analyzer
- Programmed a Python-based code to create a real-time graph of the spectral distribution of the lab's experimental laser
- Developed and implemented laser safety and chemical hygiene plans as the lab's Environmental Safety Manager

Position **Research Scientist; Senior Thesis Project**

Advisor Guy Worthey, Associate Professor of Physics

Research Dates *01/2018 - 04/2019*

Summary Analyzed light curve data from the Sloan Digital Sky Survey-Supernova Survey, to explore potential relationship between maximum luminosity and metallicity of Type Ia Supernovae. Maximum luminosity was extrapolated using template fitting method on multiple color light curves. Distance from supernova to its host galaxy was used as a proxy for the supernova metallicity.

Position **Project Engineer & Estimator**
Organization Swinerton Builders, Inc.
Location Bellevue, WA
Dates *06/2015 - 08/2017*
Responsibilities
- Managed $50k-$1.2M healthcare projects throughout the Pacific Northwest: duties include bidding, sub-quote procurement, scheduling, procurement, contracts, project cost management, documents management and closeout
- Responsible for simultaneously managing 4-8 separate projects at various stages of construction
- Led weekly project progress meetings with stake-holders, architects, engineers, and fellow Swinerton team members
- Prepared accurate and successful project estimates for both private and public clients
- Participated in networking events to create new clients while fostering existing business relationships
- Designed and implemented a new project engineer training plan and mentorship program for the Seattle division

Position **Army Engineer Officer**
Organization United States Army
Location Honolulu, HI
Dates *07/2012 - 05/2015*
Responsibilities
- Ensured the maintenance and accountability of $4M in heavy equipment and construction supplies daily
- Established and led an earthmoving construction team consisting of 20 heavy equipment operators
- Collaborated daily with 13 subordinate and lateral units to ensure fulfillment of a broad and diverse set of requirements and missions, many with short time constraints
- Succeeded in a rapidly changing and stressful environment by employing best practices of the organization and applying them to the situation
- Recognized as a high performer and based on achievement was selected to work at several positions above my pay grade facilitating higher echelon mission requirements
- Established and managed a hazardous waste and materials program for 150+ personnel
- Supervised and managed the night shift operations for a training exercise involving over 1,000 personnel

Honors & Awards

06/2021 **Cornell SmallSat Mission Design School**.
07/2020 **AstroTech Summer School**.
05/2020 **Eleanor York Prize**, *$500*.
04/2019 **Emeritus Society Excellence in Undergraduate Research and Scholarship Award**, *$500*.
12/2018 **Paul A Anderson Prize**, *$1,000*.
05/2018 **Phi Beta Kappa Society**.
05/2018 **SALUTE National Veterans Honor Society**.
04/2018 **LaRue Family Scholarship**, *$500*.
01/2017 & 01/2018 **Physics Textbook Scholarship**, *$100*.

Grants & Observing Proposals

2022 **NASA FINESST**, *$100,000*.
2021 **JWST Cycle 1, GO 2358**, *Revealing the Atmospheric Composition of a White Dwarf Planet*, 13hrs.
08/2020 **NASA Space Grant Graduate Fellowship**, *$30,477*.
08/2019 **Dean's Excellence Fellowship**, *$42,680 (stipend)*.
06/2018 **WSU College of Arts and Science Summer Research Grant**, *$3,000*.
03/2018 **NASA National Space Grant College and Fellowship Program (*Space Grant*)**, *$2,500*.

Publications

in review **Foote T. O.**, Quintana E. V., Dotson J. L., Colón K. D., Barclay T., Supsinskas P., Karburn J., et al., *Schedule optimization for transiting exoplanet observations with Pandora SmallSat*,

08/2022 **Foote T. O.**, Barclay T., Hedges, C. L., Lewis, N. K., Quintana E. V., Rackham, B. V., Colón K. D., Ciardi, D., *Pandora SmallSat data simulation and target selection*, Proc. SPIE 12180, Space Telescopes and Instrumentation 2022: Optical, Infrared, and Millimeter Wave, 121802X.

08/2022 Hoffman, K., et al. (including **Foote, T. O.)**, *The Pandora SmallSat: a mission to spectroscopically study exoplanet atmospheres*, Proc. SPIE 12180, Space Telescopes and Instrumentation 2022: Optical, Infrared, and Millimeter Wave, 121800C.

01/2022 **Foote T. O.**, Lewis, N.K., Kilpatrick, B.M., Goyal, J.M., Bruno, B., Wakeford, H.R., Robbins-Blanch, N., Kataria, T., MacDonald, R.J., Lopez-Morales, M., Sing, D.K., Mikal-Evans, T., Bourrier, V., Henry, G., Buchhave, L.A., *The Emission Spectrum of the Hot Jupiter, WASP-79b from HST/WFC3*, AJ, 163, 7.

08/2021 Quintana, E.V., et al. (including **Foote, T. O.)**, *The Pandora SmallSat: Multiwavelength Characterization of Exoplanets and their Host Stars*, arXiv, 2108.06438.

Conference Talks & Posters

07/2023 **Carl Sagan Summer Workshop**, *The Pandora SmallSat: a multi-wavelength characterization mission for Exoplanets and their Host Stars*, poster.

06/2023 **ERES VIII**, *The Pandora SmallSat: a multi-wavelength characterization mission for Exoplanets and their Host Stars*, poster.

08/2022 **Small Satellite Conference**, *Pandora SmallSat data simulation and target selection*, poster.

07/2022 **SPIE Astronomical Telescopes + Instrumentation**, *Pandora SmallSat data simulation and target selection*, poster.

07/2022 **SPIE Astronomical Telescopes + Instrumentation**, *The Pandora SmallSat: a mission to spectroscopically study exoplanet atmospheres*, talk.

01/2022 **CHAMPs Exoplanet Early Career Seminar**, *The Emission Spectrum of the Hot Jupiter, WASP-79b from HST/WFC3*, talk.

04/2019 **WSU Undergraduate Research Showcase**, *Maximum Luminosity of Type Ia Supernova as a Function of Distance from Host Galaxy*, poster.

01/2019 **APS CUWiP**, *Maximum Luminosity of Type Ia Supernova as a Function of Distance from Host Galaxy*, poster.

06/2018 **APS Northwest Section Meeting**, *Conference Attendee*.

Teaching & Mentor Experience

2022 **Search for Life in the Universe**, *Teaching Assistant*.

2021-2022 **Astronomy Graduate Mentorship Program**, *Peer Mentor*.

2021 & 2022 **Research Project Leader**, *Warrior-Scholar Project*.

2021 **Undergraduate Research Mentor**.

2020-2021 **Astronomy Graduate Mentorship Program**, *Program Supervisor*.

Professional Service

2022-present **Cornell Graduate Student Veteran Association**, *Co-founder/Vice President*.

2021 **Sloan Inclusive Leadership Workshop Series**, *Attendee*.

2020-2021 **Cornell Astronomy Graduates Network**, *President*.

2019-2020 **Cornell Astronomy Graduates Network**, *Member*.

2019-2020 **Graduate & Professional Student Assembly: Diversity & International Students Committee**, *Member*.

2018-2019 **WSU Physics & Astronomy Club**, *President*.

2017-2019 **WSU Veterans Club**, *Member*.

2017-2018 **WSU Physics & Astronomy Club**, *Member*.

Community Outreach

2019-present **Ask an Astronomer**.
- Answered questions posed by the public through the website on astronomy topics ranging from our solar system, to galaxies, to exoplanets

2021 & 2022 **Expand Your Horizons**.
- Led three hour-long workshops for middle school girls to learn about exoplanets by measuring the transit of a toy planet using a Lego orrery.

2019, 2020, & 2022 **Museum in the Dark**.
- Presented techniques used in astronomy to further our understanding of the universe to elementary school students with a reach of about 200 students and parents each year

2019 **Habitat for Humanity**.
- Assisted in construction of roof for Habitat home

2017-2019 **WSU Physics Club School Outreach Program**.
- Organized and presented physics and astronomy related demonstrations for elementary classes, rotating through several area schools during the academic year, reaching hundreds of local kids each year

2017 & 2018 **WSU Physics Club's Annual Pumpkin Drop**.
- Organized and supervised the club's major community outreach event for fall semester, with a reach of 400+ students and community members, raising awareness for our club and conveying interest in physics and astronomy concepts to children