Bryson Cale

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Employment

George Mason University — **Fairfax, VA**
Graduate Research Assistant — *August 2017 - Current*

- Developing pipelines to search for planets orbiting other stars with the radial velocity technique.
- Logged $>$ 100 partial nights of observing with the NASA Infrared Telescope Facility.
- Aided in the confirmation of 7 exoplanet candidates identified with the NASA TESS Mission.

George Mason University — **Fairfax, VA**
Tutor — *August 2017 - Current*

- Tutor George Mason Univ. student athletes in physics, calculus, differential equations, linear algebra, and other upper level math and physics classes

Missouri State University — **Springfield, MO**
Graduate Teaching Assistant — *August 2016 - May 2017*

- Leading students through an introductory astronomy lab course
- Resource for NASA Public Observing Nights at MSU's Baker Observatory

Grinnell College — **Grinnell, IA**
Physics Lab Teaching Assistant — *September 2015 - December 2015*

- Helped students to understand the fundamentals of physics through lab experiments in an introductory lab course.

Grain Processing Corporation — **Muscatine, IA**
Lab Assistant — *Summers of 2015 & 2016*

- Familiarized myself with a professional chemistry lab in the R&D Department
- Aided in the development of a method to analyze the enzyme activity in starch
- Ran experiments and completed the goal of substituting a protease enzyme for sulfuric acid in a lab sized corn steeping process

Grinnell College — **Grinnell, IA**
Tennis Stringer — *September 2012 - May 2016*

- Efficiently strung a variety of tennis racquets for both the men's and women's tennis teams at Grinnell College.

Muscatine Parks & Recreation — **Muscatine, IA**
Tennis Instructor — *February 2011 - March 2011*

- Instructed children of ages 6-12 in the basics of tennis
- Ran clinics and designed various drills to keep multiple students participating at once
- Trained students in private lessons with advanced instruction and technique

Education

Academic Qualifications

George Mason University — **Fairfax, VA**
Ph.D., Physics, Expected Graduation: May 2021 — *2017-Current*

Areas of Study: Physics & Astronomy.
Relevant Coursework: Classical Mechanics, Quantum Mechanics, Statistical Mechanics, Electricity & Magnetism, Special & General Relativity.

- **Missouri State University** **Springfield, MO**
  Master of Natural and Applied Science, Transferred after one year *2016-2017*
  Areas of Study: Physics, Astronomy, & Materials Science. Computer Science.
  Relevant Coursework: Extrasolar Planets, Stellar Astrophysics, Statistical Applications in Mat. Sci., Adv. Quantum Theory, Internet Programming, Android Development.
- **Grinnell College** **Grinnell, IA**
  Bachelor of Arts *2012-2016*
  Areas of Study: Double Major in Physics & Mathematics.
  Relevant Coursework: Classical Mechanics, Modern Physics, Electromagnetic Theory, Quantum Theory, Optics & Waves, Advanced Quantum Theory, Advanced Lab Methods, Galaxies and Cosmology, Multi-variable Calculus, Differential Equations, Linear Algebra, Hilbert-Euclidean-Poincaré Geometry, Real & Complex Analysis, Abstract Algebra, Algebraic & Point-Set Topology, Functional Problem Solving in Scheme, Imperative Problem Solving in C, Object-oriented Programming in Java.

Technical Skills

- **Packages I have written:**
  - `pychell` - `https://pychell.readthedocs.io/en/latest/`
  - `Robust Nelder Mead` - `https://robust-nelder-mead.readthedocs.io/en/latest/`
  - `Optim Parameters` - `https://optimparameters.readthedocs.io/en/latest/`
- **Programming Languages:** Python, Julia, IDL (Interactive Data Language), MATLAB, C, Java (including Android Dev., LIBGDX), HTML/CSS/PHP, JavaScript (including Three.js), Scheme
- **Other Technologies/Methodologies:** Windows, Mac, & Linux OS, Unix Shells, Systemic Console 2, Git, LaTeX, Microsoft Office, Google Docs

Publications & Presentations

- *A planet within the debris disk around the pre-main-sequence star AU Microscopii* Co-author. Nature. Plavchan et al. 2020
- *Magnetism and spin-orbit alignment in the young planetary system AU Mic* Co-author. A&A. Matioli et al. 2020
- *The CARMENES search for exoplanets around M dwarfs Two planets on the opposite sides of the radius gap transiting the nearby M dwarf LP 729–54*. Co-author. A&A. Nowak et al. 2020
- *TOI 442: The CARMENES search for exoplanets around M dwarfs: TOI 442.01=LP714-47b: Populating the Neptune desert*. Co-author. A&A. Dreizler et al. 2020
- *TOI 257: A Warm Sub-Saturn on a Moderately Eccentric Orbit*. Co-author. MNRAS Addison et al. 2020
- *Precise NIR RVs of Cool Low Mass Stars with iSHELL*. Talk. Chesapeake Bay Area Exoplanet Meeting. 2020
- *Precise Near Infrared Radial Velocities with iSHELL*. Poster. 235th American Astronomical Society Meeting. 2020
- *Precise Radial Velocities of Cool Low Mass Stars With iSHELL*. First Author. Published in *Astronomical Journal*. 2019
- *EarthFinder Report*. NASA probe study report. Co-author. Plavchan et al. 2019
- *Precise Near Infrared Radial Velocities with iSHELL*. Poster. SAGAN Meeting Workshop - *Did I Really Just Find an Exoplanet?*. 2018
- *Precise Near IR Radial Velocity First Light Observations With iSHELL*. Poster. 231st American Astronomical Society Meeting. 2018
- *iSHELL Data Analysis*. Talk. Extreme Precise Radial-Velocities. 2017
- *Precise Radial Velocity First Light Observations With iSHELL*. Session Talk. 229th American Astronomical Society Meeting. 2017
- *Transiting Exoplanet Observations at Grinnell College*. Poster. 223rd American Astronomical Society

Meeting. 2014
- *Exo-Transmit: An Open-Source Code for Calculating Transmission Spectra for Exoplanet Atmospheres of Varied Composition*. Co-author. PASP. Kempton et. al 2017.
- *Precise Near-Infrared Radial Velocities with iSHELL*. First Author. White Paper submitted to the National Academies of Science. 2018

Awards and Funding

- George Mason University Physics Department Summer Fellowship (2020), $7.5K
- NASA Exoplanet Research Program Fellowship (XRP) (Co-investigator) (2019), 3-year stipend
- George Mason University Physics Department Summer Fellowship (2018), $6K