
Ryan Morris

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EDUCATION & RESEARCH INTERESTS

Graduate: University of New South Wales, Sydney, Australia
2020 – Present *Doctorate of Philosophy in Physics*
NEWTS Group

Undergraduate: University of Maryland, College Park
2016 – 2020 *Bachelor of Science in Astronomy*
Minors: Atmospheric Science/Planetary Science/Sustainability
GPA: 3.7 Cumulative, 3.5 Major

Research Interests: Exoplanets, Atmospheres, Astrobiology

Awards: John Mather Nobel Scholar (Aug 2019)

RESEARCH EXPERIENCE

Graduate Research: GALAH and TESS Synergies – Ben Montet, UNSW
October 2020 – Present Utilizing TESS photometric data from the MAST archives in conjunction with GALAH spectroscopic data to study simultaneously observed stellar flares and elemental abundances of exoplanet host stars.

Senior Thesis: Astronomy Honors Program – Drake Deming, UMD
August 2019 – May 2020 Utilizing TESS data from the MAST archives to study secondary eclipse depths of hot Jupiters. Creating pipeline to fit eclipse model via MCMC procedure in Python. Analyzing variations in theoretical and observed eclipse depths across the sample.

NASA Goddard: Summer Intern – Knicole Colon, NASA
June 2019 – Present Using data collected from the WIYN telescope in Arizona to validate or disprove planet candidates from the Kepler, K2, and TESS missions. Calibrating images, creating light curves, designing a pipeline for targets to be analyzed with MCMC. Comparing transit depths in visible and infrared wavelengths to rule out false positives. Systematically checking transit times for null detections to update timing or advise future use of telescope. Results will be submitted to relevant academic journals and were presented at NASA Intern Research Fair.

Exoplanet Research: Undergraduate Researcher – Drake Deming, UMD
Spring 2018 In a small group, merged data from K2 and Spitzer to improve orbital ephemerides of 4 K2 exoplanets. Developed Python code through Linux command line environment to take prior values and fit with MCMC to output updated parameters. Results were submitted to relevant academic journals and will be published.

UMD Observatory: Independent Study – Elizabeth Warner, UMD
Fall 2017 Proposed research project using telescopes hands on. Observed known and unknown exoplanet transits over one semester. Prepared image sequences, calibrated images, and analyzed data to submit to the KELT Follow-Up Network. Generated light curves with AstroImageJ and returned best fit parameters. Presented research at UMD Undergraduate Research Day (April 2018).

PROFESSIONAL EXPERIENCE

Observation Class: Observatory Teaching Assistant
Fall 2019 Lead two small groups through their semester-long projects to observe variable stars with telescopes at UMD Observatory. Teach all members how to operate telescopes, take requisite calibration images, and set up observing sequences. Answer questions about how to analyze the data and best practices for observing.

APM Program: Peer Mentor
Fall 2018 – Spring 2020 Partner with a Freshman astronomy major (or prospective major) from an underrepresented group in STEM to acclimate them to UMD. Hold weekly meetings to talk about handling the semester, preparing for exams, and scheduling future semesters. Introduce mentee to resources on campus and within the department to help them achieve success. Provide useful advice on classes and embracing good habits to pass.

UMD Observatory: Staff Member
Fall 2017 – Spring 2020 Guide guests through Open House activities, including tours of the facility and operating the telescopes to view targets. Provide relevant information about targets: distance away, formation, relevance, etc. Answer questions ranging from observatory hardware to astronomical principles. Train new telescope owners in operation of equipment.

PUBLICATIONS & PRESENTATIONS

Morris, R. R. A., & Colon, K. D., 2021, In Prep
Duck, A., Harada, C., Harrell, J., **Morris, R. R. A.,** et al., 2020, In Prep.

AAS 235 Poster (Jan 2020)
NASA Intern Fair Poster (Aug 2019)
UMD Undergraduate Research Fair Poster (April 2018)

SKILLS

Languages: Python, IDL, Matlab

Software: AstroImageJ, MaximDL, DS9, Microsoft Office Suite, Google Docs Suite

Operating Systems: Windows, Linux (Ubuntu), Mac OS

Soft Skills: Leadership, Quick Adaptation, Communicating Complex Ideas, Mentorship