

Mackenna L. Wood

CONTACT INFORMATION

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EDUCATION

University of North Carolina at Chapel Hill 2018 - present
Ph.D., Expected May 2023
M.S., Physics and Astronomy, 2020
Masters Thesis: *Monte Carlo Simulation of Unseen Binaries - Using Imaginary Friends to find Invisible Things*
Clarkson University 2014 - 2018
B.A., Physics, 2018

SCIENTIFIC OUTREACH

Astronomy on Tap Triangle Organizing Committee Fall 2019-present
Assisted in the planning and execution of Astronomy on Tap Triangle public events. These are monthly events in which one or two astronomy professionals speak about their work to a public audience. Responsibilities included hosting events, advertising both in person and on social media, working with the venue, and recruiting speakers.

Space as a Time Machine - NCMNS Astronomy Days January 2022
Prepared and participated in a public talk about observational astronomy during the North Carolina Museum of Natural Sciences Astronomy Days 2022 event. Presented virtually to 35 people, and answered audience questions. Talk is available on Youtube: https://youtu.be/z2NezRBcV3c?list=PL7d0NoqMaCha_sfKRe1BtZr-_4THTQ6W-.

Ask an Astronomer Panel - NCMNS Astronomy Days January 2022
Participated in a public panel about astronomy and careers in astronomy at the North Carolina Museum of Natural Sciences Astronomy Days 2022 event. Talk is available on Youtube: https://youtu.be/HkR-IdgMYdA?list=PL7d0NoqMaCha_sfKRe1BtZr-_4THTQ6W-.

Astronomy on Tap Triangle Public Talk December 2019
Prepared and presented a 20 minute public talk on my research on young planets and clusters to an audience of 40 people at the Astronomy on Tap Triangle December 2019 Event.

Astronomy Guest Nights, Morehead Observatory, UNC Fall 2018 - Spring 2019
Planned and led weekly guest nights at the Morehead Observatory. This involved preparing the observing schedule, communicating with the visitors and leading the events.

Mobile Planetarium Show, Fort Ann Central School District June 2018
Ran planetarium shows for elementary aged students, teaching them about the sun, moon, constellations, and planets.

Camp Counselor, IMPETUS Program, Clarkson University July 2017 - December 2017
Assisted 6-12 grade students in activities to learn math and science.

TEACHING

Astronomy 101 Lab TA Fall 2018, Spring 2019, Fall 2021
Prepared lecture material and guided students through lab procedures while giving hands on assistance for the introductory astronomy course. Guided students in using research-grade telescopes to obtain astronomical images, and to analyze those images.

Observational Astronomy Lab TA Fall 2021
Taught the lab period, answered student questions and provided programming assistance for the advanced observational astronomy course.

PUBLICATIONS

First Authored Peer-Reviewed Publications:
Characterizing Undetected Stellar Companions with Combined Data Sets. Wood, Mackenna L., Mann, A. W., & Kraus, A. L. (2021). *The Astronomical Journal*, 162, 128.

Design of High Quality Chemical XOR Gates with Noise Reduction. Wood, Mackenna L., et al. *ChemPhysChem*, vol. 18, no. 13, July 2017, pp. 1773–81.

Other Peer-Reviewed Publications:

The Orbit and Stellar Masses of the Archetype Colliding-Wind Binary WR-140. Thomas, Joshua D., et al. Monthly Notices of the Royal Astronomical Society, vol. 504, no. 4, July 2021, pp. 5221–30. Silverchair.

TESS Hunt for Young and Maturing Exoplanets (THYME). V. A Sub-Neptune Transiting a Young Star in a Newly Discovered 250 Myr Association. Tofflemire, Benjamin M., et al. The Astronomical Journal, vol. 161, no. 4, Mar. 2021, p. 171. Institute of Physics.

TESS Hunt for Young and Maturing Exoplanets (THYME). IV. Three Small Planets Orbiting a 120 Myr Old Star in the Pisces–Eridanus Stream. Newton, Elisabeth R., et al. The Astronomical Journal, vol. 161, no. 2, Jan. 2021, p. 65. Institute of Physics.

TOI-811b and TOI-852b: New Transiting Brown Dwarfs with Similar Masses and Very Different Radii and Ages from the TESS Mission. Carmichael, Theron W., et al. The Astronomical Journal, vol. 161, no. 2, Jan. 2021, p. 97. Institute of Physics.

TESS Hunt for Young and Maturing Exoplanets (THYME). III. A Two-Planet System in the 400 Myr Ursa Major Group. Mann, Andrew W., et al. The Astronomical Journal, vol. 160, no. 4, Sept. 2020, p. 179. Institute of Physics.

TESS Hunt for Young and Maturing Exoplanets (THYME). II. A 17 Myr Old Transiting Hot Jupiter in the Sco-Cen Association. Rizzuto, Aaron C., et al. no. 1, June 2020, p. 33. Institute of Physics.

TESS Hunt for Young and Maturing Exoplanets (THYME): A Planet in the 45 Myr Tucana–Horologium Association. Newton, Elisabeth R., et al. The Astrophysical Journal, vol. 880, no. 1, July 2019, p. L17. Institute of Physics.

Experimental Realization of a High-Quality Biochemical XOR Gate. Filipov, Y., et al. (2017). ChemPhysChem, 18(20), 2908–2915.

General Science Writing

The Strange Case of the "First Exoplanet" Wood, M. L., (2021, September 19) *The Pipettepen* <http://www.thepipettepen.com/the-strange-case-of-the-first-exoplanet/>

When Astronomy Goes Wrong Wood, M. L., (2021, April 18) *The Pipettepen* <http://www.thepipettepen.com/when-astronomy-goes-wrong/>

Second From the Sun - A Brief History of Observations of Venus Wood, M. L., (2020, September 19) *The Pipettepen* <http://www.thepipettepen.com/second-from-the-sun-a-brief-history-of-observations-of-venus/>

Superflares and Tough Bacteria Wood, M. L., (2020, March 31) *The Pipettepen* <http://www.thepipettepen.com/superflares-and-tough-bacteria/>

How to Find a Planet in 3 (not so) Easy Steps Wood, M. L., (2019, November 11) *The Pipettepen* <http://www.thepipettepen.com/how-to-find-a-planet-in-3-not-so-easy-steps/>

PRESENTATIONS

Improving Planet Parameters through Composite Limits on Stellar Companions, M.L. Wood, A. W. Mann
Poster, AAS 235 Meeting in Honolulu, HA. January, 2020

Making Lemonade out of LEMON: Improved Photometry Processing Software, M.L. Wood, J. Thomas
Poster presented at RAPS Conference Spring 2018, Clarkson University;

Oral Presentation at RAPS Conference Spring 2018, Clarkson University;

Poster presented at NYSS APS and ASNY Joint Conference, Fall 2017, Union College

Winner of Best Poster in Session, RAPS Spring 2018

Winner of Audience-Choice Best Poster, RAPS Spring 2018

Analysis of Chemical Reactions for a Biochemical XOR Logic Gate, M. L. Wood

Poster presented at SURE Conference August 2016, Clarkson University

Oral presentation SURE Conference August 2016, Clarkson University

Crash and Bounce: The interaction between vortex rings and solid walls at various distances, M. L. Wood

Poster presented at SURE Conference August 2014, Clarkson University

WORKSHOPS AND TRAINING

Sagan Summer Workshop, NASA Exoplanet Science Institute
Penn State's Summer School in Statistics for Astronomers
Standard Safe Zone Training, UNC Chapel Hill LGBTQ Center

July 2021
June 2019
February 2020

DEPARTMENTAL SERVICE

Physics & Astronomy Graduate Student Association Co-President	Fall 2020 - Spring 2022
Physics & Astronomy Graduate Student Association Social Chair	Fall 2021 - Spring 2022
Physics & Astronomy Grad-Undergrad Mentoring Planning Committee	Fall 2020 - Spring 2021
AM.WISE Graduate Student Mentoring	Fall 2020 - Spring 2021

HONORS AND AWARDS

NSF GRFP Honorable Mention 2020	UNC Chapel Hill
Physics Department Outstanding Senior Award, 2018	Clarkson University
Kristin Bandy Craig Memorial Award, 2017	Clarkson University
Sigurds Aarajs Memorial Award, 2014	Clarkson University

OBSERVING EXPERIENCE

PI Observing:

SOAR, Goodman High Throughput Spectrograph - 6 nights

Three nights in Fall 2020 for observing Lithium within the newly-discovered Pisces-Eridanus stellar stream.

Three nights in Spring 2022 for observing Lithium within the Carina and Vela-CG4 stellar associations.

Other Observing:

SOAR, Goodman High Throughput Spectrograph - 18 Nights

Extensive experience using the SOAR telescope and Goodman HTS to obtain astronomical data, and reducing and analyzing the data. Trained other lab members and members of outside groups on the use of the telescope, wrote and maintained the observing guide used by all members of the lab group.

Keck NIRSPEC - 3 Nights

Keck NIRC2 - 4 Nights