Charlotte M. Wood — CV

Iowa State University, 2323 Osborn Drive, Ames, IA 50011
cwood12@iastate.edu • https://charlottemwood.com
astrocmwood

Education

University of Notre Dame **Notre Dame, IN**
Ph.D. Physics *January 2023*
"Testing the Top Rung of the Distance Ladder: Understanding Type Ia Supernova Variations and their Effect on the Hubble Constant"
Advisor: Dr. Peter Garnavich

Hofstra University **Hempstead, NY**
B.S. Physics, Minor in Astronomy *May 2016*
Magna Cum Laude, High Departmental Honors, Honors College Graduate with Distinction
Advisor: Dr. Stephen S. Lawrence

Professional Appointments

Astronomy & Astrophysics Prize Postdoctoral Fellow **Ames, IA**
Department of Physics & Astronomy, Iowa State University *September 2022 - present*

Research Interests

- **Type Ia Supernovae** – Using observational methods to distinguish between different progenitor scenarios for specific supernovae
- **Supernova Cosmology** – Exploring the effect of type Ia supernova systematics on the Hubble constant
- **Light Echoes** – Mapping the dust distribution around supernovae to study progenitors and the local environment

Grants, Fellowships, & Awards

HST Cycle 30 Archival Research Program (HST-AR-17062.004)
Iowa State University *Jan. 2023 - Dec. 2025*
Amount: $47,676 for travel, undergraduate research, & new equipment.

Sigma Xi Grant in Aid of Research
University of Notre Dame *Fall 2019*

Graduate School Professional Development Award
University of Notre Dame *Spring 2019*

Arthur J. Schmitt Leadership Fellowship
University of Notre Dame *Sep. 2016 - Aug. 2021*

Harold E. Clearman Memorial Award
Hofstra University *Spring 2015*

Publications

- *Benchmarking Substellar Evolutionary Models Using New Age Estimates for HD 4747 B and HD 19467 B*
  C. M. Wood, T. Boyajian, K. von Braun, J. M. Brewer, J. R. Crepp, G. Schaefer, A. Adams, & T. R. White; *The Astrophysical Journal*, 873, 83 (doi:10.3847/1538-4357/aafe01; arXiv:1901.03687)

- *Infrared Surface Brightness Fluctuation Distances to Type Ia Supernova Hosts: Testing the Top Rung of the Distance Ladder*
  P. Garnavich, **C. M. Wood**, P. Milne, J. Jensen, J. Blakeslee, P. Brown, D. Scolnic, D. Brout, & B. Rose; submitted to *The Astrophysical Journal* (arXiv:2204.12060)
- *The Pantheon+ Type Ia Supernova Sample: Cosmological Constraints*
  D. Brout, D. Scolnic, B. Popovic, A. G. Riess, J. Zuntz, R. Kessler, A. Carr, T. M. Davis, S. Hinton, D. O. Jones, W. D. Kenworthy, E. R. Peterson, K. Said, G. Taylor, N. Ali, P. Armstrong, P. Charvu, A. Dwomoh, A. Palmese, H. Qu, B. M. Rose, C. W. Stubbs, M. Vincenzi, **C. M. Wood**, P. J. Brown, R. Chen, K. Chambers, D. A. Coulter, M. Dai, G. Dimitriadis, A. V. Filippenko, R. J. Foley, S. W. Jha, L. Kelsey, R. P. Kirshner, A. Möller, J. Muir, S. Nadathur, Y.-C. Pan, A. Rest, C. Rojas-Bravo, M. Sako, M. R. Siebert, M. Smith, B. E. Stahl, & P. Wiseman; *The Astrophysical Journal*, 938, 110 (doi:10.3847/1538-4357/ac8e04; arXiv:2202.04077)
- *The Pantheon+ Supernova Ia Sample: SuperCal-Fragilistic Cross Calibration, Retrained SALT2 Light Curve Model, and Calibration Systematic Uncertainty*
  D. Brout, G. Taylor, D. Scolnic, **C. M. Wood**, B. M. Rose, M. Vincenzi, A. Dwomoh, C. Lidman, A. Riess, N. Ali, H. Qu, M. Dai, & C. Stubbs; *The Astrophysical Journal*, 938, 111 (doi:10.3847/1538-4357/ac8bcc; arXiv:2112.03864)
- *The Pantheon+ Type Ia Supernova Sample: The Full Dataset and Light-curve Release*
  D. Scolnic, D. Brout, A. Carr, A. G. Riess, T. M. Davis, A. Dwomoh, D. O. Jones, N. Ali, P. Charvu, R. Chen, E. R. Peterson, B. Popovic, B. M. Rose, **C. M. Wood**, P. J. Brown, D. A. Coulter, K. G. Dettman, G. Dimitriadis, A. V. Filippenko, R. J. Foley, S. W. Jha, C. D. Kilpatrick, R. P. Kirshner, Y.-C. Pan, A. Rest, C. Rojas-Bravo, M. R. Siebert, B. E. Stahl, & W. Zheng; *The Astrophysical Journal*, 938, 113 (doi:10.3847/1538-4357/ac8b7a; arXiv:2112.03863)
- *Infrared Surface Brightness Fluctuation Distances for MASSIVE and Ia Supernova Host Galaxies*
  J. B. Jensen, J. P. Blakeslee, C.-P. Ma, P. A. Milne, P. J. Brown, M. Cantiello, P. M. Garnavich, J. E. Greene, J. R. Lucey, A. Phan, R. B. Tully, & **C. M. Wood**; *The Astrophysical Journal Supplement Series*, 255, 21 (doi:10.3847/1538-4365/ac01e7; arXiv:2105.08299)
- *Rapid Variability in the Wind from the White Dwarf Merger Candidate J005311*
  P. Garnavich, C. Littlefield, R. Pogge, & **C. M. Wood**; *Research Notes of the American Astronomical Society*, 4, 167 (doi:10.3847/2515-5172/abbb8b; arXiv:2009.12380)
- *The TRENDS High-Contrast Imaging Survey. VIII. Compendium of Benchmark Objects*
  E. J. Gonzales, J. R. Crepp, E. B. Bechter, **C. M. Wood**, J. A. Johnson, B. T. Montet, H. Isaacson, & A. W. Howard; *The Astrophysical Journal*, 893, 27 (doi: 10.3847/1538-4357/ab71fb; arXiv:2010.11866)
- *High-Time-Resolution Photometry of AR Scorpii: Confirmation of the White Dwarf's Spin-Down*
  R. A. Stiller, C. Littlefield, P. Garnavich, **C. M. Wood**, F.-J. Hambsch, & G. Myers; *The Astronomical Journal*, 156, 150 (doi:10.3847/1538-3881/aad5dd; arXiv:1802.04323)

Invited Talks

- **Surface Brightness Fluctuation Distances to Type Ia Supernovae: Testing Supernova Systematics as a Solution to the Hubble Constant Tension**
  Seminar, Hofstra University, Mar. 2023
  Seminar, University of Notre Dame, Jan. 2023
  Special Session Talk, 241st Meeting of the American Astronomical Society, Jan. 2023
- **Connecting the Variations in Type Ia Supernovae to Progenitors and the H_0 Tension**
  Seminar, Iowa State University, Sep. 2022
  Tea Talk, KIPAC, Stanford University, Jan. 2022

- **Testing the Top Rung of the Distance Ladder: Comparing H_0 Using SBF & Cepheid Distances**
  Seminar, CIERA, Northwestern University, Nov. 2021
  Seminar, University of Arizona, Oct. 2021
  Seminar, Duke University, Oct. 2021
  Tea Talk, KIPAC, Stanford University, Oct. 2021
  Seminar, University of Kansas, Oct. 2021
- **Echoes of Silence: Probing Type Ia Supernova Environments with Scattered Light Echoes**
  Seminar, Michiana Astronomical Society, Apr. 2021
  Colloquium, Utah Valley University, Mar. 2021
  Colloquium, University of Louisville, Feb. 2021
  Seminar, University of Notre Dame, Oct. 2020
- **The Slowly Fading Light Echo Around Type Ia Supernova 2009ig**
  Seminar, University of Notre Dame, Mar. 2019
- **Navigating Graduate School**
  Seminar, Hofstra University, Mar. 2019

Contributed Talks

- **Understanding Type Ia Supernova Variations and their Effect on the Hubble Constant**
  Dissertation Talk, 241st Meeting of the American Astronomical Society, Jan. 2023
- **Testing the Top Rung of the Distance Ladder: Comparing H_0 Using SBF & Cepheid Distances**
  Talk, Graduate Physics Society Annual Conference, University of Notre Dame, Dec. 2021
- **Rapid Variability in the Wind from the White Dwarf Merger Candidate J005311**
  iPoster, 237th Meeting of the American Astronomical Society, Virtual, Jan. 2021
- **The Evolution of the Light Echo Around Type Ia Supernova 1998bu**
  Poster, 235th Meeting of the American Astronomical Society, Honolulu, HI, Jan. 2020
- **The Slowly Fading Light Echo Around Type Ia Supernova 2009ig**
  Poster, Graduate Physics Society Annual Conference, University of Notre Dame, Nov. 2019
  Poster, Midwest Workshop on Supernovae & Transients, Ohio State University, Sep. 2019
  Talk, Graduate Physics Society Annual Conference, University of Notre Dame, Apr. 2019
  Talk, Midwest Workshop on Supernovae & Transients, University of Chicago, Feb. 2019
  Poster, 233rd Meeting of the American Astronomical Society, Seattle, WA, Jan. 2019
- **Benchmarking Substellar Evolutionary Models Using New Age Estimates for HD 4747 B and HD 19467 B**
  Talk, College of Science and Engineering Joint Annual Meeting, University of Notre Dame, Dec. 2018
  Poster, AWIS Women in Science Regional Conference, University of Notre Dame, Oct. 2018
- **Precise Ages for the Benchmark Brown Dwarfs HD 19467 B and HD 4747 B**
  Poster, 231st Meeting of the American Astronomical Society, Washington D.C., January 2018
- **The Origin of Metals in Extremely Low Mass White Dwarfs**
  Poster, Undergraduate Research Day, Hofstra University, Dec. 2015

Observing Experience

Observing Runs at the Large Binocular Telescope **Tucson, AZ**
University of Notre Dame *Oct. 2018 - Sep. 2023*
Remote observing from the University of Arizona for projects submitted by OSURC member institutions. Total of 45 nights using LBC, MODS, LUCI, & PEPSI.

Observing Runs at the W. M. Keck Observatory **Waimea, HI**
University of Notre Dame *June 2019, June 2020*
Remote observing from the W. M. Keck Observatory Headquarters and the University of Notre Dame. Total of one 1/2 night on DEIMOS & one 1/2 night on LRIS.

Observing Run at Cerro Tololo Interamerican Observatory **La Serena, Chile**
Hofstra University *Oct./Nov. 2014*
Traditional observing with the 0.8m SMARTS telescope at CTIO. Total of 3 nights.

Teaching Experience

Guest Lecturer **Ames, IA**
Iowa State University *Fall 2022 - present*
Covered lectures for instructor of record. One lecture for ASTRO 150 (Stars, Galaxies, and Cosmology) and two lectures for ASTRO 120 (The Sky and the Solar System).

Physics Research Writing Consultant **Notre Dame, IN**
University of Notre Dame *Fall 2020 - Spring 2022*
Trained by the University Writing Center in general writing pedagogy principles to work as a writing consultant specifically for members of the Physics Department (students, post-docs, professors, etc.).

Instructor - Scientific Writing for the REU **Notre Dame, IN**
University of Notre Dame *Summer 2021*
Designed & ran a shortened version of the Scientific Writing for Physicists course. Introduced the REU students to more planning & drafting tools, as well as talked to them about how to write a good scientific paper and how to make effective figures & tables.

Physics Teaching Practicum **Notre Dame, IN**
University of Notre Dame *Fall 2018 - Spring 2022*
Covered six lectures under observation of another instructor and created a teaching portfolio. Classes: Introduction to Astrophysics (3; undergraduate), Physics of Astrophysics (1; undergraduate/graduate), Scientific Writing (1; graduate), Descriptive Astronomy (1; undergraduate)

Teaching Assistant for Descriptive Astronomy **Notre Dame, IN**
University of Notre Dame *Fall 2016, Fall 2017-Fall 2020, Spring 2022*
Responsibilities include running the observatory, organizing help sessions, helping proctor exams, helping rewrite observing projects, and grading for the non-science majors introductory astronomy class. Lead TA from Fall 2017-Spring 2019 and for Fall 2020.

Teaching Assistant for Modern Observational Techniques **Notre Dame, IN**
University of Notre Dame *Fall 2019, 2021*
Responsibilities include creating answer keys and grading homework assignments for the graduate student methods class.

Teaching Assistant for Physics of Astrophysics **Notre Dame, IN**
University of Notre Dame *Fall 2018, 2020, 2021*
Responsibilities include grading and assisting with homework assignments and running an observing session for the introductory graduate student astrophysics class.

Teaching Assistant for Lasers and Modern Optics **Notre Dame, IN**
University of Notre Dame *Spring 2017*
Responsibilities include setting up and testing labs, grading lab reports, and proctoring an exam for the junior/senior undergraduate optics class/lab.

Activities & Outreach

Boy Scout Campout **Ames, IA**
Iowa State University *March 2023*

Led an observing session with K-5th grade boys as part of a campout. Pointed out prominent constellations & objects and answered questions about space & becoming an astronomer.

CUWiP Panel - Getting Into Graduate School **Iowa City, IA**
University of Iowa *January 2023*
Served as a panelist discussing getting into graduate school and how to be successful once there for the Conference for Undergraduate Women in Physics at the University of Iowa.

Girl Scout Campout **Ames, IA**
Iowa State University *October 2022*
Led an observing session with K-5th grade girls as part of a campout. Pointed out prominent constellations & objects and answered questions about space & becoming an astronomer.

Writing Tutor for the Warrior-Scholar Project **Notre Dame, IN**
University of Notre Dame *July 2021 & June 2022*
Helped the scholars navigate and adjust to reading & writing in a university environment. Provided guidance on written work and answered questions about the given prompt.

Graduate Physics Society Public Relations Chair **Notre Dame, IN**
University of Notre Dame *Fall 2020 - Spring 2021*
Served as the chair of the PR committee for the physics graduate student organization. Responsibilities include circulating a newsletter with upcoming events & news and maintaining social media accounts & the website.

Graduate Physics Society Executive Board **Notre Dame, IN**
University of Notre Dame *Summer 2018 - Spring 2020*
Served as the astronomy group representative on the executive board for the physics graduate student organization. E-board acts as a bridge between the graduate students and the department and helps organize all GPS events.

Association for Women in Science Physics Department Representative **Notre Dame, IN**
University of Notre Dame *Fall 2019 - Spring 2020*
Department representatives act as a liaison between AWIS and their respective departments and help organize & promote professional development events that support women in science.

Mid-Autumn Festival Celebration **Notre Dame, IN**
University of Notre Dame *October 2020*
Gave a presentation about the Moon and planned to observe the Moon remotely (observing was clouded out) as part of a celebration of the Mid-Autumn Festival with the Chinese Culture Society.

Faculty Observing Night **Notre Dame, IN**
University of Notre Dame *March 2020*
Set up telescopes and answered questions during a night of public observing with faculty and their families.

Our Universe Revealed **Notre Dame, IN**
University of Notre Dame *December 2019*
Set up demonstrations for a public lecture on the extremes of the solar system.

Mercury Transit Event **Notre Dame, IN**
University of Notre Dame *November 2019*
Helped coordinate an event on campus for Notre Dame students to observe the Mercury transit.

Apollo 11 50th Anniversary Celebration **Mishawaka, IN**
Bittersweet Elementary School *July 2019*
Set up interactive demos and ran telescopes for solar observing as part of an event celebrating the 50th anniversary of the Moon landing.

JINA-CEE Art-2-Science Camp **Notre Dame, IN**
University of Notre Dame *July 2019*
Guided elementary & middle school students through craft activities to teach them about sound.

Science Alive **Notre Dame, IN**
University of Notre Dame *February 2019*
Helped with interactive demonstrations that teach physics & astronomy to children in the local community.

Summertime Stargazing **Notre Dame, IN**
University of Notre Dame *July/August 2018*
Assisted with two large public observing events, set up telescopes and helped answer questions.

Observing for Physics of Atomic Nuclei Students **Notre Dame, IN**
University of Notre Dame *June 2018*
Held an observing night for high school students attending the JINA-CEE Physics of Atomic Nuclei camp.

Expanding Your Horizons **Notre Dame, IN**
University of Notre Dame *April 2018*
Ran a workshop to teach middle school girls about exoplanets and helped them craft their own papier-mâché exoplanets.

Skills

Computer Languages/Programs: Python, Git, LaTeX, IRAF/PyRAF, Mathematica, MATLAB, IDL.

Spoken Languages: English (native), Spanish (limited working proficiency), Italian (elementary).

Professional Organizations

- **American Astronomical Society**
  AAS is the major organization of professional astronomers in North America. Their mission is to enhance and share humanity's scientific understanding of the universe.
- **Association for Women in Science**
  AWIS is dedicated to driving excellence in STEM by achieving equity and full participation of women in all disciplines and across all employment sectors.
- **Sigma Xi**
  Sigma Xi, The Scientific Research Honor Society, is the international honor society of science and engineering.
- **Phi Beta Kappa**
  ΦBK aims to promote and advocate excellence in the liberal arts and sciences and to induct the most outstanding students of arts and sciences at American colleges and universities.
- **Sigma Pi Sigma**
  ΣΠΣ exists to honor outstanding scholarship in physics and to provide a fellowship of persons who have excelled in physics.