Charlotte M. Wood | CV

225 Nieuwland Science Hall, University of Notre Dame, Notre Dame, IN 46556

✉ cwood12@nd.edu • https://charlottemwood.com • astrocmwood

Education

University of Notre Dame — **Notre Dame, IN**
Ph.D. Physics — *expected August 2022*
"Connecting the Variations in Type Ia Supernovae to the Hubble Constant Tension"
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 — *August 2022 - present*

Research Interests

- **Type Ia Supernovae** – Using observational methods to distinguish bewteen 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

Publications

- *Probing the Environment and Progenitor of Type Ia Supernova 2009ig Using Scattered Light Echoes*
  C. M. Wood, P. Garnavich, P. Milne, & D. Drozdov; in prep, submitting to *The Astrophysical Journal*
- *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; in prep, submitting to *The Astrophysical Journal*
- *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; submitted to *The Astrophysical Journal* (arXiv:2202.04077)

- *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; submitted to *The Astrophysical Journal Letters* (arXiv:2112.03863)
- *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; submitted to *The Astrophysical Journal* (arXiv:2112.03864)
- *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

- **Connecting the Variations in Type Ia Supernovae to Progenitors and the H_0 Tension**
  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

Conference Presentations

- **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 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 Runs at the Large Binocular Telescope **Tucson, AZ**
University of Notre Dame *Oct. 2018 - Jan. 2022*
Remote observing from the University of Arizona for projects submitted by OSURC member institutions. Total of 43 nights using LBC, MODS, LUCI, & PEPSI.

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

Physics Research Writing Consultant **Notre Dame, IN**
University of Notre Dame *Fall 2020 - present*
Trained by the University Writing Center in general writing pedagogy prinicples 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 - present*
Covered six lectures (five complete, one upcoming) 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, upcoming)

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**
Universiy 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

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

Graduate Physics Society Public Relations Chair **Notre Dame, IN**
University of Notre Dame *Fall 2020 - Spring 2021*
Serving as the chair of the PR committee for the physics graduate student organization. Responibilities 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 liason 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 paper-mache exoplanets.

Awards

Astronomy & Astrophysics Prize Postdoctoral Fellowship
Iowa State University *Fall 2022*
This 3-year fellowship supports independent research by an early-career scientist in astronomy and astrophysics.

Sigma Xi Grant in Aid of Research
University of Notre Dame *Fall 2019*
Grant from Sigma Xi to pay for travel expenses to and from a research site, or for purchase of non-standard laboratory equipment necessary to complete a specific research project.

Graduate School Professional Development Award
University of Notre Dame *Spring 2019*
Grant from the ND College of Science to support research-related travel, excluding presenting at conferences.

Arthur J. Schmitt Leadership Fellowship
University of Notre Dame *Spring 2016*
This fellowship is awarded to the top 15 students in the ND Colleges of Science and Engineering each year.

Skills

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

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.

References

- **Dr. Peter Garnavich**
  Professor of Physics, Department Chair
  University of Notre Dame
  Notre Dame, IN
  - Contact info:
    Office: 228 Nieuwland Science Hall
    Phone: (574) 631-3365
    E-mail: pgarnavi@nd.edu
- **Dr. J. Christopher Howk**
  Professor of Physics
  University of Notre Dame
  Notre Dame, IN
  - Contact info:
    Office: 339b Nieuwland Science Hall
    Phone: (574) 631-8594
    E-mail: jhowk@nd.edu
- **Dr. Peter A. Milne**
  Research Professor, Lecturer for Astronomy
  University of Arizona
  Tucson, AZ
  - Contact info:
    Office: N208 Steward Observatory
    Phone: (520) 626-5731
    E-mail: pmilne@as.arizona.edu
- **Dr. Joseph B. Jensen**
  Professor of Physics, Department Chair
  Utah Valley University
  Orem, UT
  - Contact info:
    Office: PS 207
    Phone: (801) 863-8666
    E-mail: jjensen@uvu.edu
- **Dr. Stephen S. Lawrence**
  Professor of Physics and Astronomy
  Hofstra University
  Hempstead, NY
  - Contact info:
    Office: 217A Berliner Hall
    Phone: (516) 463-5584
    E-mail: stephen.s.lawrence@hofstra.edu
- **Dr. Mukremin Kilic**
  Associate Professor of Physics and Astronomy
  University of Oklahoma
  Norman, OK
  - Contact info:
    Office: 137 Nielsen Hall
    Phone: (405) 325-6611
    E-mail: kilic@ou.edu