

# Charlotte M. Wood | CV

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🐦 astrocmwood

## Education

### University of Notre Dame

*Ph.D. Physics*

“Testing the Top Rung of the Distance Ladder: Understanding Type Ia Supernova Variations and their Effect on the Hubble Constant”

Advisor: Dr. Peter Garnavich

Notre Dame, IN

August 2022

### Hofstra University

*B.S. Physics, Minor in Astronomy*

Magna Cum Laude, High Departmental Honors, Honors College Graduate with Distinction

Advisor: Dr. Stephen S. Lawrence

Hempstead, NY

May 2016

## Professional Appointments

### Astronomy & Astrophysics Prize Postdoctoral Fellow

*Department of Physics & Astronomy, Iowa State University*

Ames, IA

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

## Selected Publications

- *Benchmarking Substellar Evolutionary Models Using New Age Estimates for HD 4747 B and HD 19467 B*  
C. M. Wood, et al.; *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, et al.; submitted to *The Astrophysical Journal* (arXiv:2204.12060)
- *The Pantheon+ Type Ia Supernova Sample: Cosmological Constraints*  
D. Brout, D. Scolnic, . . . , C. M. Wood, et al.; *The Astrophysical Journal*, in press (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, et al.; *The Astrophysical Journal*, in press (arXiv:2112.03864)
- *The Pantheon+ Type Ia Supernova Sample: The Full Dataset and Light-curve Release*  
D. Scolnic, D. Brout, . . . , C. M. Wood, et al.; *The Astrophysical Journal Letters*, in press (arXiv:2112.03863)
- *Infrared Surface Brightness Fluctuation Distances for MASSIVE and Ia Supernova Host Galaxies*  
J. B. Jensen, J. P. Blakeslee, . . . , & C. M. Wood; *The Astrophysical Journal Supplement Series*, 255, 21 (doi:10.3847/1538-4365/ac01e7; arXiv:2105.08299)

## Invited Talks

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- **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

## Conference Presentations

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- **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, Midwest Workshop on Supernovae & Transients, Ohio State University, Sep. 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

## Other Research Experience

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### Observing Experience

*University of Notre Dame, Hofstra University*

Remote observing at the W. M. Keck Observatory. Total of one 1/2 night on DEIMOS & one 1/2 night on LRIS.  
Remote observing at the Large Binocular Telescope. 40+ nights using LBC, MODS, LUCI, & PEPSI.  
Traditional observing at Cerro Tololo Interamerican Observatory. Total of 3 nights on the 0.8m SMARTS telescope.

### The Origin of Metals in Extremely Low Mass White Dwarfs

*University of Oklahoma*

Research Experience for Undergraduates – Advisor: Dr. Mukremin Kilic

Looked for evidence of debris disks around extremely low mass white dwarfs as a source of calcium excess.

**Various locations**

*Fall 2014 - present*

**Norman, OK**

*Summer 2015*

## Teaching Experience

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### Physics Research Writing Consultant

*University of Notre Dame*

Notre Dame, IN

*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

*University of Notre Dame*

Notre Dame, IN

*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

*University of Notre Dame*

Notre Dame, IN

*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 Physics Classes

*University of Notre Dame*

Notre Dame, IN

*Fall 2016-Spring 2022*

Responsibilities include setting up lab equipment, grading, helping proctor exams, and organizing help sessions for students. Classes: Descriptive Astronomy (undergraduate), Lasers & Modern Optics (undergraduate), Physics of Astrophysics (graduate), Modern Observational Techniques (undergraduate/graduate).

## Activities & Outreach

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### Graduate Physics Society & Association for Women in Science

*University of Notre Dame*

Notre Dame, IN

*Summer 2018 - Spring 2021*

Served as the astronomy group representative on the executive board for the physics graduate student organization from summer 2018 - spring 2020 and as the public relations chair from summer 2020 - spring 2021. Served as the physics department representative for AWIS from fall 2019 - spring 2020. Responsibilities included organizing, advertising, and running social & professional development events.

### Public Observing Events

*University of Notre Dame*

Notre Dame, IN

Coordinated observing events for the public. Includes an observing event for high school summer camp students, two large, public observing events, a Mercury transit viewing, and an observing event for faculty and their families.

### Science Demonstration Events

*University of Notre Dame*

Notre Dame, IN

Set up and ran demos for children. Includes running a session for Expanding Your Horizons (science workshops for middle school girls), staffing a booth at Science Alive (general science demos for the public), running a session for Art-2-Science (week-long science crafts camp for elementary & middle schoolers), setting up demos for an event celebrating the 50th anniversary of the Moon landing, and setting up demos for Our Universe Revealed (public lecture series).

### Writing Tutor for the Warrior-Scholar Project

*University of Notre Dame*

Notre Dame, IN

*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.

## Awards

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### 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.

## 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

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**Computer Languages/Programs:** Python, IRAF/PyRAF, L<sup>A</sup>T<sub>E</sub>X, Mathematica, MATLAB, IDL, Git.

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

## References

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- **Dr. Peter Garnavich**  
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University of Notre Dame  
Notre Dame, IN
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- **Dr. Peter A. Milne**  
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