

# Dr. Charlotte M. Wood

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## Education

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**Ph.D. Physics, University of Notre Dame** 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

**B.S., Hofstra University** May 2016

**Major:** *Physics*; **Minor:** *Astronomy*

*Magna cum laude; High Departmental Honors; Honors College Graduate with Distinction*

**Advisor:** Dr. Stephen S. Lawrence

## Professional Appointments

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**Assistant Professor** Jan. 2025 - present

*North Carolina Agricultural & Technical State University*  
Department of Physics

*Greensboro, North Carolina*

**Astronomy & Astrophysics Prize Postdoctoral Fellow** Sept. 2022 - Dec. 2024

*Iowa State University*

*Ames, Iowa*

**Advisor:** Dr. Frank Krennrich

## Research Interests

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**Type Ia Supernovae** Using observational methods to understand the physics driving the explosion (progenitors, ignition mechanism, etc.)

**Supernova Cosmology** Using type Ia supernovae to measure fundamental properties of the universe (i.e., the Hubble constant, dark energy)

**Light Echoes** Using reflected light to map the dust around transient & variable sources and to determine extragalactic dust properties

## Grants Awarded

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**HST Cycle 30 Archival Research Program** Jan. 2023 - Dec. 2025

*Revisiting SH0ES: A Search for Light Echoes Around Type Ia Supernovae*

- **Role:** Principal Investigator
- **PI(s):** C. M. Wood (NC A&T), P. Garnavich (Notre Dame), S. Lawrence (Hofstra)
- **Amount:** \$47,676

**NASA Roman Space Telescope Research & Support Opportunity** Nov. 2023 - Sept. 2028

*A Roman Project Infrastructure Team to Support Cosmological Measurements with SNe Ia*

- **Role:** Co-Investigator
- **PI(s):** D. Scolnic (Duke), B. Rose (Baylor), R. Hounsell (NASA), D. Rubin (Hawaii)
- **Amount:** ~ \$11M (total across all institutions)

## HST Cycle 31 General Observer Program

Jan. 2024 - Dec. 2025

*Extending Precision Cosmology to Early Hosts of SNe Ia via SBF Distances*

- **Role:** Co-Investigator
- **PI(s):** P. Milne (Arizona), J. Jensen (Utah Valley), J. Blakeslee (NOIRLab), P. Garnavich (Notre Dame), **C. M. Wood** (NC A&T), P. Brown (Texas A&M)
- **Amount:** TBD

## HST Cycle 32 General Observer Program

Jan. 2025 - Dec. 2026

*Reflections of a Violent Past: Using Light Echoes to Survey Historical Supernovae in M82*

- **Role:** Co-Investigator
- **PI(s):** S. Lawrence (Hofstra), P. Garnavich (Notre Dame), **C. M. Wood** (NC A&T), A. Rest (STScI)
- **Amount:** TBD

## Publications

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**First Author:** 3; **Co-Author:** 8; **Total:** 11.

1. Detection and Characterization of a Light Echo Around Type Ia Supernova 2009ig, *submitted*  
**C. M. Wood**, P. Garnavich, S. Lawrence, P. Milne
2. Light Echoes of an Unknown Supernova Remnant in 30 Doradus, *in preparation*  
**C. M. Wood**, A. Rest, E. Johnson, J. Mack, E. Sabbi, R. Angulo
3. Benchmarking Substellar Evolutionary Models Using New Age Estimates for HD 4747 B and HD 19467 B, *The Astrophysical Journal*, 873, 83 (doi:10.3847/1538-4357/aafe01; arXiv:1901.03687)  
**C. M. Wood**, T. Boyajian, K. von Braun, J. M. Brewer, J. R. Crepp, G. Schaefer, A. Adams, & T. R. White
4. Connecting Infrared Surface Brightness Fluctuation Distances to Type Ia Supernova Hosts: Testing the Top Rung of the Distance Ladder, *The Astrophysical Journal*, 953, 35 (doi:10.3847/1538-4357/ace04b; arXiv:2204.12060)  
P. Garnavich, **C. M. Wood**, P. Milne, J. Jensen, J. Blakeslee, P. Brown, D. Scolnic, D. Brout, & B. Rose
5. The Pantheon+ Type Ia Supernova Sample: The Full Data Set and Light-Curve Release, *The Astrophysical Journal*, 938, 113 (doi:10.3847/1538-4357/ac8b7a; arXiv:2112.03863)  
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
6. The Pantheon+ Type Ia Supernova Sample: SuperCal-Fragilistic Cross Calibration, Retrained SALT2 Light Curve Model, and Calibration Systematic Uncertainty, *The Astrophysical Journal*, 938, 111 (doi:10.3847/1538-4357/ac8bcc; arXiv:2112.03864)  
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
7. The Pantheon+ Type Ia Supernova Sample: Cosmological Constraints, *The Astrophysical Journal*, 938, 110 (doi:10.3847/1538-4357/ac8e04; arXiv:2202.04077)  
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

8. Infrared Surface Brightness Fluctuation Distances for MASSIVE and Ia Supernova Host Galaxies, *The Astrophysical Journal Supplement Series*, 255, 21 (doi:10.3847/1538-4365/ac01e7; arXiv:2105.08299)  
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**
9. Rapid Variability in the Wind from the White Dwarf Merger Candidate J005311, *Research Notes of the AAS*, 4, 167 (doi:10.3847/2515-5172/abbb8b; arXiv:2009.12380)  
P. Garnavich, C. Littlefield, R. Pogge, & **C. M. Wood**
10. The TRENDS High-Contrast Imaging Survey. VIII. Compendium of Benchmark Objects, *The Astrophysical Journal*, 893, 27 (doi: 10.3847/1538-4357/ab71fb; arXiv:2010.11866)  
E. J. Gonzales, J. R. Crepp, E. B. Bechter, **C. M. Wood**, J. A. Johnson, B. T. Montet, H. Isaacson, & A. W. Howard
11. High-Time-Resolution Photometry of AR Scorpii: Confirmation of the White Dwarf's Spin-Down, *The Astronomical Journal*, 156, 150 (doi:10.3847/1538-3881/aad5dd; arXiv:1802.04323)  
R. A. Stiller, C. Littlefield, P. Garnavich, **C. M. Wood**, F.-J. Hambsch, & G. Myers

## Invited Talks

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<b>Mar. 2025</b>	University of Arizona, Tucson, AZ (virtual)
<b>Mar. 2025</b>	Sienna College, Loudonville, NY (virtual)
<b>Mar. 2025</b>	University of Northern Iowa, Cedar Falls, IA (virtual)
<b>Sept. 2024</b>	North Carolina Agricultural & Technical State University, Greensboro, NC
<b>Sept. 2024</b>	Hofstra University, Hempstead, NY
<b>Apr. 2024</b>	Baylor University, Waco, TX
<b>Mar. 2024</b>	Iowa State University, Ames, IA
<b>Feb. 2024</b>	TSST Seminar Series, Space Telescope Science Institute, Baltimore, MD
<b>Jan. 2024</b>	243rd Meeting of the AAS ( <i>Roman</i> Supernova Pipeline Splinter), New Orleans, LA
<b>Nov. 2023</b>	Iowa State University Physics & Astronomy Council, Ames, IA
<b>Mar. 2023</b>	Hofstra University, Hempstead, NY
<b>Jan. 2023</b>	University of Notre Dame, South Bend, IN (virtual)
<b>Jan. 2023</b>	241st Meeting of the AAS (SH0ES/Pantheon+ Special Session), Seattle, WA
<b>Sept. 2022</b>	Iowa State University, Ames, IA
<b>Jan. 2022</b>	KIPAC, Stanford University, Stanford, CA (virtual)
<b>Nov. 2021</b>	CIERA, Northwestern University, Evanston, IL (virtual)
<b>Oct. 2021</b>	University of Arizona, Tucson, AZ
<b>Oct. 2021</b>	Duke University, Durham, NC (virtual)
<b>Oct. 2021</b>	KIPAC, Stanford University, Stanford, CA (virtual)
<b>Oct. 2021</b>	University of Kansas, Lawrence, KS (virtual)
<b>Apr. 2021</b>	Michiana Astronomical Society, South Bend, IN (virtual)
<b>Mar. 2021</b>	Utah Valley University, Orem, UT (virtual)
<b>Feb. 2021</b>	University of Louisville, Louisville, KY (virtual)
<b>Oct. 2020</b>	University of Notre Dame, South Bend, IN (virtual)
<b>Mar. 2019</b>	University of Notre Dame, South Bend, IN
<b>Mar. 2019</b>	Hofstra University, Hempstead, NY

## Contributed Talks & Presentations

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<b>Apr. 2024</b>	Science with HST & JWST VII, Porto, Portugal (talk)
<b>Jan. 2024</b>	243rd Meeting of the AAS, New Orleans, LA (talk)
<b>June 2023</b>	The Transient & Variable Universe, University of Illinois Urbana-Champaign (talk)
<b>Jan. 2023</b>	241st Meeting of the AAS, Seattle, WA (dissertation talk)
<b>Dec. 2021</b>	Graduate Physics Society Annual Conference, University of Notre Dame (talk)
<b>Jan. 2021</b>	237th Meeting of the AAS, virtual (iPoster)
<b>Jan. 2020</b>	235th Meeting of the AAS, Honolulu, HI (poster)
<b>Nov. 2019</b>	Graduate Physics Society Annual Conference, University of Notre Dame (poster)
<b>Sept. 2019</b>	Midwest Workshop on Supernovae & Transients, Ohio State University (poster)
<b>Apr. 2019</b>	Graduate Physics Society Annual Conference, University of Notre Dame (talk)
<b>Feb. 2019</b>	Midwest Workshop on Supernovae & Transients, University of Chicago (talk)
<b>Jan. 2019</b>	233rd Meeting of the AAS, Seattle, WA (poster)
<b>Dec. 2018</b>	College of Science & Eng. Joint Annual Meeting, University of Notre Dame (talk)
<b>Oct. 2018</b>	AWIS Women in Science Regional Conference, University of Notre Dame (poster)
<b>Jan. 2018</b>	231st Meeting of the AAS, Washington, D.C. (poster)

## Teaching Experience

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**Assistant Professor** Jan. 2025 - present  
*North Carolina Agricultural & Technical State University* Greensboro, North Carolina

- **Courses taught:** PHYS 101 - Introduction to Astronomy (Spring 2025, Fall 2025)

**Guest Lecturer** Sept. 2022 - Dec. 2024  
*Iowa State University* Ames, Iowa

- Covered lectures for the instructor of record, with slides provided. Six lectures total: 3 lectures for ASTRO 150 (Stars, Galaxies & Cosmology), 3 lectures for ASTRO 120 (The Sky and Our Solar System).

**Physics Research Writing Consultant** Aug. 2020 - May 2022  
*University of Notre Dame* South Bend, Indiana

- Trained by the University Writing Center in general writing pedagogy principles and consulted on writing projects (scientific papers, theses, proposals, etc.) for any member of the Department of Physics & Astronomy (including professors, postdocs, visiting scholars, graduate & undergraduate students).

**Instructor of Record for *Scientific Writing for the REU and Beyond*** July 2021  
*University of Notre Dame* South Bend, Indiana

- Designed & ran a shortened version of the Scientific Writing for Physicists graduate student course for visiting REU students. Covered planning & drafting methods, what makes a good scientific paper, how to make effective figures & tables, and more. The course culminates in a report of the student's summer research.

**Physics Teaching Practicum** Aug. 2018 - May 2022  
*University of Notre Dame* South Bend, Indiana

- Covered six lectures for the instructors of record under observation of another instructor. Topic(s) to cover were discussed with the instructor of record, but lecture notes/materials are my own. Created a teaching portfolio including my lecture notes, feedback from the observers, self-reflections, and feedback from the students.
- Classes: Introduction to Astrophysics (3, undergraduate); Physics of Astrophysics (1, graduate/undergraduate); Scientific Writing (1, graduate); Descriptive Astronomy (1, undergraduate)

## Graduate Teaching Assistant

*University of Notre Dame*

Aug. 2016 - May 2022

*South Bend, Indiana*

- **Descriptive Astronomy:** Ran the observatory, organized help sessions, proctored exams, re-wrote observing projects, graded assignments. Acted as lead TA for Fall 2017-Spring 2019 and Fall 2020 semesters where I coordinated the efforts of all the TAs for the class.
- **Modern Observational Techniques:** Graded assignments, created answer keys, ran observing sessions with the Sarah L. Krizmanich Telescope on campus.
- **Physics of Astrophysics:** Graded assignments, ran help sessions, and ran an observing session with the Sarah L. Krizmanich Telescope.
- **Lasers & Modern Optics:** Set up and tested lab materials/procedures, graded lab reports, proctored exams.

## Advising Experience

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### Graduate Students

Sept. 2025 - present

Chibuzor Otika, North Carolina A&T - MS

### Undergraduate Students

May 2025 - Aug. 2025

Gordon McLellan, North Carolina A&T

Aug. 2023 - Dec. 2024

Leah Newton, Iowa State University

Jan. 2023 - Jan. 2024

George Nassif, Iowa State University

2024 LAS Dean's High Impact Award for Undergraduate Research

### Other

May 2025 - Aug. 2025

TBD HS Teacher, North Carolina A&T & QuarkNet

## Observing Experience

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### **Large Binocular Telescope**

~ 50 nights

*MODS, PEPSI, LUCI, LBC*

*Mt. Graham, Arizona*

Remote queue observing for OSURC member institutions using facility instruments.

### **W. M. Keck Observatory**

1 night

*DEIMOS, LRIS*

*Mauna Kea, Hawaii*

Two half-nights of remote classical observing.

### **Cerro Tololo Interamerican Observatory**

3 nights

*0.9-m SMARTS telescope*

*Cerro Tololo, Chile*

Three nights of classical observing on site.

## Technical Skills

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### **Data Analysis Methods**

Photometry, difference imaging, maximum likelihood, Markov-Chain Monte Carlo

### **Programming Languages**

Python, Git, L<sup>A</sup>T<sub>E</sub>X, R, Mathematica, MATLAB, IDL, IRAF

### **Spoken Languages**

English (native), Spanish (limited working proficiency), Italian (elementary)

## Fellowships & Awards

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Dec. 2019

Sigma Xi Grant in Aid of Research (Sigma Xi)

Mar. 2019

Graduate School Professional Development Award (Notre Dame)

Sept. 2016

Arthur J. Schmitt Leadership Fellowship (Notre Dame)

Feb. 2015

Harold E. Clearman Memorial Award (Hofstra)

## Service & Broader Impacts

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### Service

Mar. 2025 - present	Ombudsperson, <i>Roman</i> Supernova PIT Collaboration
Feb. 2025 - present	Department Outreach Committee Member, NC A&T
Sept. 2023 - present	Reviewer for <i>The Astrophysical Journal</i>
May 2024	<i>Hubble Space Telescope</i> Cycle 32 Discussion Panelist
Sept. 2023 - May 2024	Code of Conduct Task Force, <i>Roman</i> Supernova PIT Collaboration
Aug. 2020 - May 2021	Graduate Physics Society Public Relations Chair, South Bend, IN
Aug. 2019 - May 2020	AWIS Physics Department Representative, South Bend, IN
Aug. 2018 - May 2020	Graduate Physics Society Executive Board, South Bend, IN

### DEI

Jan. 2023	Getting into Graduate School CUWiP Panel, Iowa City, IA
June 2022	Warrior Scholar Project Writing Tutor, South Bend, IN
July 2021	Warrior Scholar Project Writing Tutor, South Bend, IN
Apr. 2018	Expanding Your Horizons, South Bend, IN

### Lectures/Workshops

Mar. 2025	Introduction to QuarkNet, Greensboro, NC
Dec. 2019	Our Universe Revealed, South Bend, IN
July 2019	Apollo 11 50th Anniversary Celebration, Mishawaka, IN
July 2019	JINA-CEE Art-2-Science Camp, South Bend, IN
Feb. 2019	Science Alive, South Bend, IN

### Public Observing

Sept. 2024	Girl Scout Observing Night, Ames, IA
Apr. 2024	Eclipse Over Texas, Waco, TX
Sept. 2023	Girl Scout Observing Night, Ames, IA
Mar. 2023	Boy Scout Campout, Boone, IA
Oct. 2022	Girl Scout Campout, Boone, IA
Oct. 2020	Mid-Autumn Festival Celebration, South Bend, IN (virtual)
Mar. 2020	Faculty Observing Night, South Bend, IN
Nov. 2019	Mercury Transit Event, South Bend, IN
Aug. 2019	Summertime Stargazing II, South Bend, IN
July 2019	Summertime Stargazing I, South Bend, IN
June 2018	Physics of Atomic Nuclei Camp Observing Night, South Bend, IN

## References

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Dr. Peter Garnavich	University of Notre Dame, Professor of Physics pgarnavi@nd.edu
Dr. Daniel Scolnic	Duke University, Associate Professor of Physics daniel.scolnic@duke.edu
Dr. Matthew Capdevielle	University of Notre Dame, University Writing Center Director mcapdev1@nd.edu
Dr. Steven Kawaler	Iowa State University, Distinguished Professor of Physics sdk@iastate.edu
Dr. Shelly R. Leshner	North Carolina A&T, Professor & Chair of Physics srlesher@ncat.edu