# Amanda J White, PhD

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## Education

**University of Colorado, Boulder** — **Boulder, CO**
*Department of Astrophysical & Planetary Sciences* — *2016 – 2023*

**PhD** in Astrophysics and Planetary Sciences, *November 2023*
**Master of Science** in Astrophysics and Planetary Sciences, *December 2018*

**Drexel University** — **Philadelphia, PA**
*College of Arts and Sciences, Department of Physics* — *2007 – 2011*

**Bachelor of Science** in Physics, *Cum Laude, June 2011*
Concentration: Astrophysics
*Pennoni Honors College*, Graduation with Distinction

## Research Experience

**Graduate Research Assistant** — **Boulder, CO**
*National Solar Observatory* — *2017 – 2023*

**Dissertation:** "Understanding Polarization Accuracy: Effects of Dielectric Mirror Coatings on Polarization Behavior at a System Level"
**Advisor:** David M. Harrington, Ph.D.

- Quantified the effects of depolarization from mirrors on the Daniel K. Inouye Solar Telescope
- Safely handled, measured, and transported delicate, one-of-a-kind optics
- Collected lab polarimeter data in MATLAB to verify various optical coatings on mirrors, dichroics, crystal retarders and other optics in transmission and reflection
- Reduced and analyzed lab data with custom Python and Mathematica code bases

**Confocal Microscopy Specialist; Research Asst. to Curator of Meteorites** — **New York, NY**
*American Museum of Natural History (AMNH)* — *2011 – 2016*

**Project:** "Three-Dimensional Analysis of NASA Stardust Tracks"
**Supervisor:** Denton S. Ebel, Ph.D.

- Authored NASA LARS grant as Scientific Lead to obtain Raman spectrometer at AMNH
- Developed method to collect reflectance spectroscopy on a confocal microscope integrated with a Raman spectrometer
- Imaged aerogel keystones containing particle tracks returned by the NASA Stardust Mission in three-dimensions with a laser scanning confocal microscope
- Mapped keystones with Synchrotron X-Ray Fluorescence for compositional studies to complement imaging

- Characterized Stardust particle tracks based on track size for impact modeling studies
- Created first experimentally obtained point spread function (PSF) in aerogel for laser scanning confocal microscope to be used in image deconvolution

**Planetary Science Summer School in Space Mission Design**
*NASA Jet Propulsion Laboratory* *2021*

- Participated in the design of a mock New Frontiers class mission to Venus
- Produced mission's science traceability matrix (STM) for final proposal and review board
- Shadowed JPL Team-X Propulsion Chair through concurrent engineering design review

**Undergraduate Research Assistant** **Philadelphia, PA**
*Department of Physics, Drexel University* *2008 – 2011*

**Projects:** "UV Star Formation Rate of Void Dwarf Galaxies" & "Properties of Interacting Void Galaxies"
**Advisor:** Michael S. Vogeley, Ph.D.

**University of Hawai'i, Institute for Astronomy REU Student** **Pukalani, HI**
*Institute for Astronomy Maui, University of Hawai'i* *2010*

**Project:** "The Search for Scattering Polarization of $H_2$ in the Second Solar Spectrum"
**Advisor:** Jeffrey R. Kuhn, Ph.D.

- Operated the SOLAR-C telescope on Haleakalā, Maui, HI
- Modified spectropolarimeter to take polarization measurements of solar disk at $2\mu m$

## Grants

– **Scientific Lead and Co-Investigator**, NASA Laboratory Analysis of Returned Samples, equipment grant, "Support for a Raman Spectrometer for Laser Scanning Confocal Microscopy of Stardust Samples" – FY14; **$116k**

– **Co-Investigator**, NASA Laboratory Analysis of Returned Samples, "Non-destructive Analysis of Comet Grains and Tracks: Minerals and Original Grain Properties" – FY16–FY18 (3 yr.); **$390k**

## Publications

– **White, A.J.** & Harrington, D.M., (2023) "Effect of mirror coating non-uniformity on depolarization." *In Prep.*

– **White, A.J.** & Harrington, D.M., (2023) "Modeling the polarization behavior of multi-layered mirror coatings for system-level polarization modeling of DKIST." *In Prep.*

– Harrington, D.M., Sueoka, S.R., Schad, T.A., Beck, C., Eigenbrot, A.D., de Wijn, A.G., Casini, R., **White, A.J.**, Jaeggli, S.A., (2023) "Systems Approach to Polarization Calibration for the *Daniel K. Inouye Solar Telescope*," *Solar Phys.* 298, 10.

- Harrington, D.M., Wöger, F., **White, A.J.**, Sueoka, S.R., (2021) "Polarization modeling and predictions for Daniel K. Inouye Solar Telescope, part 9: Flux Distribution with FIDO," *J. Astron. Telesc. Instrum. Syst.* 7(4) 048005.
- Harrington, D.M., Schad, T.A., Sueoka, S.R., **White, A.J.**, (2021) "Polarization modeling and predictions for DKIST, part 8: calibration polarizer spatial variation impacts," *J. Astron. Telesc. Instrum. Syst.* 7(3) 038002.
- Harrington, D.M., Sueoka, S.R., & **White, A.J.**, Eigenbrot, A., Schad, T.A., (2021) "Polarization modeling and predictions for Daniel K. Inouye Solar Telescope, part 7: preliminary NCSP system calibration and model fitting," *J. Astron. Telesc. Instrum. Syst.* 7(1) 018004.
- Harrington, D.M., Jaeggli, S.A., Schad, T.A., **White, A.J.**, Sueoka, S.R., (2020) "Polarization modeling and predictions for Daniel K. Inouye Solar Telescope, part 6: fringe mitigation with polycarbonate modulators and optical contact calibration retarders," *J. Astron. Telesc. Instrum. Syst.* 6(3) 038001.
- Harrington, D.M., Sueoka, S.R., & **White, A.J.**, (2019) "Polarization modeling and predictions for Daniel K. Inouye Solar Telescope part 5: impacts of enhanced mirror and dichroic coatings on system polarization calibration." *J. Astron. Telesc. Instrum. Syst.* 5(3) 038001.
- Gainsforth, Z., Westphal, A.J., Butterworth, A.L., Jilly-Rehak, C.E., Brownlee, D.E., Joswiak, D.J., Ogliore, R.C., Zolensky, M.E., Bechtel, H.A., Ebel, D.S., Huss, G.R., Sandford, S.A. and **White, A.J.** (2019), "Fine-grained material associated with a large sulfide returned from Comet 81P/Wild 2". *Meteorit Planet Sci*, 54: 1069-1091.
- Moorman, C.M., Moreno, J., **White, A.J.**, Vogeley, M.S., Hoyle, F., Giovanelli, R., Haynes, M.P., (2016) "On the Star Formation Properties of Void Galaxies." *ApJ* **831**, pp 118-131.
- **White, A.J.** and Ebel, D. S.,(2015) "Imaging Samples in Silica Aerogel Using and Experimental Point Spread Function." *Microscopy and Microanalysis* **21**, pp 172-178.

## Extended Abstracts

- Alpert, H., Ahrens, C., Bell, T., Bierson, C., Bonnet, K., Dhingra, R., Dinsmore, R., Dzurilla, K., Garland, J., Gustafson, E.L., Knicely, J., Kremer, C., Lowry, V., Naz, N., Niemoeller, S., O'Brien, P., **White, A.J.**, Zucherman, A., Lowes, L., Hudson, T., Mitchell, K., (2022) "Verne: Revealing the mysteries and histories of Venus "*Lunar Planet Sci* **LIII**.
- Gainsforth, Z., Butterworth, A. L., Jilly-Rehak, C. E., Westphal, A. J., Brownlee, D. E., Joswaik, D., Ogliore, R. C., Zolensky, M. E., Bechtel, H. A., Ebel, D. S., Huss, G. R., Sandford, S. A., **White, A.J.**, (2016) "Possible Gems and Ultra-Fine Grained Polyphase Units in Comet Wild 2" *Lunar Planet Sci* **XLVII**, 2366.
- **White, A.J.**, Ebel, D. S., Greenberg, M., (2014) "Nondestructive Three-Dimensional Confocal Imaging and SXRF of Whole Stardust Tracks in Aerogel" *Lunar Planet Sci* **XLV**, 2292.
- **White, A.J.**, Ebel, D. S., Greenberg, M., (2013) "An Improved Experimental Deconvolution Technique for 3-Dimensional Laser Confocal Microscopy of Particles in Aerogel" *Lunar Planet Sci* **XLIV**, 1630.
- **White, A.J.**, Ebel, D. S., Greenberg, M., (2012) "Comparison of Deconvolution Techniques in 3-Dimensions of Stardust Tracks in Aerogel" *Lunar Planet Sci* **XLIII**, 1542.

## Teaching Experience

**Teaching Assistant** **Boulder, CO**
*Department of Astrophysical & Planetary Sciences, CU Boulder* *F16, S17, S18*

- **Lab TA for ASTR 1030** - *Accelerated Introductory Astronomy I*
  an introductory course tailored towards ASTR majors – Spring 2018
- **TA for ASTR 1000** - *The Solar System*
  an introductory course tailored towards non-science majors – Spring 2017
- **Lab TA for ASTR 1010** - *Introductory Astronomy I*
  an introductory course tailored towards non-science majors – Fall 2016

**Science Research Mentoring Program (SRMP) Mentor** **New York, NY**
*Department of Education, AMNH* *2015 – 2016*

- Research mentor for 4 NYC high school students for the 2015-2016 academic year
- Advised students on a project to characterize NASA Stardust cometary tracks
  Student work related directly to what the AMNH team was researching
- Met with students 4hrs/week to discuss planetary science and goals of the project
- One student presented her work at the 2017 New York City Science & Engineering Festival (NYCSEF), a regional qualifier for the 2017 Intel International Science and Engineering Fair

**AMNH After School Program Lecturer** **New York, NY**
*Department of Education, AMNH* *2012 – 2016*

- Taught *Cosmology*, an astrophysics class for high school students and revamped curriculum; one 8-week session
- Taught *Secrets of the Solar System*, a planetary science class for high school students; four 8-week sessions

**Adjunct Lecturer** **New York, NY**
*Department of Physics and Astronomy, Hunter College* *2012*

- Assistant Lecturer for Astronomy 101 evening classes

**SPS After School Physics Program** **Philadelphia, PA**
*Society of Physics Students, Drexel University* *2008 – 2010*

- Initiated an after school mentorship program for 7th and 8th graders through the Drexel Society of Physics Students
- Program ran biweekly at Independence Charter School in Philadelphia for three years
- Developed lessons on advanced physics topics utilizing hands on demonstrations

## Service & Leadership Activities

**Graduate Concerns and Curriculum Committee**
*University of Colorado Boulder, Dept. of Astrophysical & Planetary Sciences* *2019 – 2023*

- Represented graduate student body in an elected position when presenting concerns and needs to APS faculty
- Worked with faculty counterparts of GCCC to address student needs
- Lobbied for and co-authored a department grievance policy
  - Influenced a grievance policy change at the Graduate School level
- Influenced redesign of department comprehensive exam and core curriculum to be robust and equitable for all students
- Organized and ran monthly Graduate Student meetings

**Women and Gender Minorities Mentoring Circle**
*University of Colorado Boulder, Dept. of Astrophysical & Planetary Sciences* *2017 - 2023*

- Created a space for women and gender minorities associated with the APS department to meet and support each other.
- Facilitate events and social gatherings to encourage community and peer support structures

**Faculty Search, Graduate Student Representative**
*University of Colorado Boulder, Dept. of Astrophysical & Planetary Sciences* *Spring 2019, Spring 2017*

- Represented graduate student body during interviews of faculty candidates.
- Authored interview questions on teaching philosophy.

**Graduate Teacher Program Lead for APS**
*University of Colorado Boulder, Graduate School* *2017 – 2018*

- Facilitated communication between the Graduate School and home department
- Mentored department TAs in order to improve teaching ability and self confidence in graduate students

**Drexel University Chapter of the Society of Physics Students**
*Drexel University, Department of Physics* *2007 - 2011*

**President** - 2008 - 2010
**Treasurer** - 2010 - 2011 & 2007 - 2008

- Obtained University recognition and funding as a student organization
- Doubled chapter size through recruitment
- Started award-winning outreach mentorship program at Independence Charter School
- Drexel SPS chapter recieved 10 national awards while President
  - Outstanding Chapter Award, Zone 3, 2009, 2010
  - Marsh White Outreach Award, 2008, 2009, 2010
  - $\Sigma\Pi\Sigma$ Undergraduate Research Award, 2008, 2010
  - $\Sigma\Pi\Sigma$ Project Award, 2009, 2010
  - SPS Reporter Award, 2008

## Mentoring

**APS Binary Stars**
*Dept. of Astrophysical and Planetary Sciences, CU Boulder* *2020-2022*
– Graduate Student peer mentor

**Peer Mentoring Program**
*Graduate School, CU Boulder* *2017-2020*
– Graduate Student peer mentor

**CU Prime**
*Dept. of Physics, CU Boulder* *2018-2019*
– Mentor for 3 undergraduates in Physics and Astrophysics

**Science Research Mentoring Program**
*Dept. of Education, AMNH* *2015-2016*
– Research mentor for 4 high school students

**Pennoni Honors College Student Mentor**
*Pennoni Honors College, Drexel University* *2008 - 2011*
– Peer mentor for six freshmen students in physics and math

## Public Talks

– *Stardust under a microscope*, Astronomy on Tap CO, January 2017.
– *Imaging Space Rocks*, AMNH SciCafe (bit.ly/SpaceRockSciCafe), Dec 2014
– *Stardust under a microscope*, Astronomy on Tap NYC, June 2014.
– *Interacting Void Galaxies in the Sloan Digital Sky Survey*,
College of Arts and Sciences 20th Anniversary Celebration, Drexel 2010, Invited Speaker

## Honors & Awards

– Chance Irick Cooke Endowed Fellowship, 2023
  – *CU Boulder, Dept of Astrophysical and Planetary Sciences*
– George Ellery Hale Graduate Fellow, CU Boulder, 2017 - 2020
  – *Full tuition and stipend*
– Barry M. Goldwater Scholar, 2010
– Drexel College of Arts and Sciences Research Day 2011
  – Undergraduate Natural Sciences, 1st Place
– Inducted to $\Sigma\Pi\Sigma$ Physics Honor Society, April 2010
– A.J. Drexel Scholarship, Drexel University, 2007 - 2011
– Students Tackling Advanced Research (STAR) Scholar, Drexel University, 2008
  – Stipend for research project on interacting void galaxies

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