Amanda J White

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Education

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

PhD in Astrophysics and Planetary Sciences, *expected August 2022*
Master of Science in Astrophysics and Planetary Sciences, *December 2018*

Drexel University — **Philadelphia, PA**
College of Arts and Sciences, Department of Physics — *Fall 2007 – Spring 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 — *May 2017 – Present*

Dissertation: "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
- Manage NSO's Boulder-based custom polarimetry system, NLSP
- Collect lab polarimeter data in MATLAB to verify various optical coatings on mirrors, dichroics, crystal retarders and other optics in transmission and reflection
- Reduce and analyze lab data with custom Python and Mathematica code bases

Planetary Science Summer School in Space Mission Design
NASA Jet Propulsion Laboratory — *June – August 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

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

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

- Authored grant as Scientific Lead to obtain Raman spectrometer at AMNH
- Developed method to collect reflectance spectroscopy with confocal microscope and 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 Florescence for compositional studies to compliment imaging
- Characterized 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

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

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

- Calculated UV star formation rates (SFR) of dwarf galaxies in voids in order to study galaxy evolution
- Extended previous studies for void galaxy colors to much fainter magnitudes
- Compared UV SFR with ALFALFA HI masses to calculate star formation "efficiency"
- Created a catalog of potentially interacting pairs located in voids
- Studied the statistics of interaction locations within voids
- Measured star formation rates from Hα equivalent widths for galaxy pairs
- Contributed to a successful observing proposal
- Operated the 2.1m telescope at KPNO during observing run
- Reduced and analyzed spectra obtained at KPNO

University of Hawai'i, Institute for Astronomy REU Student **Pukalani, HI**
Institute for Astronomy Maui, University of Hawai'i *June – August 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 $2\mu m$
- Made first observations of the infrared second solar spectrum

Content Analysis Coding Assistant **Philadelphia, PA**
The iSchool at Drexel University *March – June 2010*

- Assessed journal articles for relevance to the Sloan Digital Sky Survey for a group of non-astronomers who visualized how SDSS data is used by the astronomical community

SUNY Stony Brook REU Student **Stony Brook, NY**
Department of Physics and Astronomy, SUNY Stony Brook *June – August 2009*

Project: "The Mid-IR Spectrum of a Young, Cool, Brown Dwarf"
Advisor: Stanimir Metchev, Ph.D.

- Reduced and analyzed mid-IR spectrum of brown dwarf HN PEG B using Spitzer data
- Classified spectral type and measured CH_4 and NH_3 spectral indicies for brown dwarf

SPS Variable Star Project **Philadelphia, PA**
Lynch Observatory, Drexel University *January – December 2008*
Funded by 2008 $\Sigma\Pi\Sigma$ Undergraduate Research Award

- Imaged variable stars over course of project and analyzed their light curves
- Results were compared with and contributed to the American Association of Variable Star Observers

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

  - Taught two lab sections that ran concurrent with the course

Science Research Mentoring Program Mentor **New York, NY**
Department of Education, AMNH *October 2015 – June 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 *November 2012 – May 2016*

- Taught *Cosmology* to high school students (November-December 2012) and revamped curriculum
- Taught *Secrets of the Solar System*, a planetary science class for high school students (January-February 2014, October-December 2014, February-April 2015, March-April 2016)

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

- Teaching Assistant for Astronomy 101 evening classes
- Taught a computer lab, classroom lab, and led review session for students

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

Extended Abstracts

– 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.

Grants

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

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

Select Papers

– **White, A.J.** & Harrington, D.M., (2021) "Effect of mirror coating non-uniformity on depolarization." *In Prep.*

– 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 miror and dichroic coatings on system polarization calibration." *JATIS* **5**, pp 1-57.

– 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.

Select Science Presentations

– Talk - *"First Steps Towards System-level Polarization Predictions for DKIST: Using Berreman Calculus to Model the Polarization Behavior of Dielectric Mirror Coatings"*, National Solar Observatory Seminar, October 2018

- Poster - *"Raman Spectroscopy of Whole Samples in Aerogel Using a Laser Scanning Confocal Microscope"*, 78th Annual Meeting of the Meteoritical Society, July 2015.
- Poster - *"A potential method for identifying minerals in comet samples using Raman spectroscopy with a laser scanning confocal microscope"*, Microscopy and Microanalysis, 2014.
- Poster - *Nondestructive Three-Dimensional Confocal Imaging and SXRF of Whole Stardust Tracks in Aerogel*, Lunar and Planetary Science Conference, 2014.
- Poster - *An Improved Experimental Deconvolution Technique for 3-Dimensional Laser Confocal Microscopy of Particles in Aerogel*, Lunar and Planetary Science Conference, 2013.
- *Comparison of Deconvolution Techniques in 3-Dimensions of Stardust Tracks in Aerogel*, Lunar and Planetary Science Conference, 2012.
- *Ultraviolet Star Formation Rates of Dwarf Void Galaxies*, Drexel University Research Day, 2011.
- *Ultraviolet Star Formation Rates of Dwarf Void Galaxies*, Drexel College of Arts and Sciences Research Day, 2011.
- *The Search for Molecular Hydrogen in the IR Second Solar Spectrum*, 217th AAS Meeting, January 2011.
- *Interacting Void Galaxies in the Sloan Digital Sky Survey*, Conference for Undergraduate Women in Physics at Yale, 2010.
- *Interacting Void Galaxies in the Sloan Digital Sky Survey*, Drexel University Research Day, 2009 .
- *Interacting Void Galaxies in the Sloan Digital Sky Survey*, College of Arts and Sciences Research Day, 2009.
- *SPS Variable Star Observation and Search*, $\Sigma\Pi\Sigma$ Quadrennial Congress, 2008.
- *Physics in Philly: Engaging and Enlightening Experiments for High School Students*, $\Sigma\Pi\Sigma$ Quadrennial Congress, 2008.
- *Interacting Void Galaxies in the Sloan Digital Sky Survey*, STAR Research Day, Drexel University, 2008.

Professional Societies

- American Astronomical Society
  , since 2015
  - Division of Planetary Science , since 2015
- The Planetary Society, since 2017
- The American Association for the Advancement of Science, since 2016
- The American Physical Society
- The Meteoritical Society, 2015-2016
- $\Sigma\Pi\Sigma$ (Sigma Pi Sigma), since 2010
- Society of Physics Students, 2007 – 2017

Select Honors & Awards

- George Ellery Hale Graduate Fellow, CU Boulder, 2017 - 2020
- Barry M. Goldwater Scholar, 2010
- Walter R. Coley Award, 2011
- 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
- Lorenzo Narducci Memorial Scholarship, 2010
- M. Russell Wehr Physics Award, 2009
- Drexel University Research Day 2009
  - Research in Physical Science and Engineering, Undergraduate Honorable Mention
- College of Arts and Sciences Research Day 2009
  - Undergraduate Natural Sciences, 3rd Place
- Students Tackling Advanced Research (STAR) Scholar, Drexel University, 2008

Select Service Activities

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

- Represent graduate student body when presenting concerns and needs to APS faculty
- Influenced redesign of dept. comprehensive exam and core curriculum to be robust and equitable for all students
- Organize and run monthly Graduate Student meetings

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

- Act as a liaison between the Graduate School and home department of Astrophysical & Planetary Sciences
- Provide resources to department TAs in order to improve teaching ability and self confidence in graduate students

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

- Represented graduate student body during interviews of faculty candidates. One of four graduate representatives

Planetarium Committee, Graduate Student Representative
University of Colorado Boulder, Dept. of Astrophysical & Planetary Sciences *2016 - 2017*

- Acted as liaison between Fiske Planetarium and graduate student body

- Reported any Fiske news at monthly grad student meetings

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

President - March 2008 - June 2010
Treasurer - June 2010 - June 2011 & September 2007 - March 2008

- Obtained University recognition and funding as a student organization
- Doubled chapter size through recruitment
- Worked extensively on chapter's variable star research project
- Started award-winning outreach mentorship program at Independence Charter School
- Revitalized Drexel University's Chapter of $\Sigma\Pi\Sigma$
- Nominated for Zone 3 Associate Zone Councilor, 2010
- Drexel SPS chapter recieved 10 national awards while President
- Awards Received by Drexel SPS 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
- Participated on all of above projects and associated committees
- Volunteered at and organized numerous chapter run outreach events including a long term Mentorship Program at Independence Charter School; MLK Day, 2010 at Penrose Elementary; Drexel Physics Kaczmarczik Day, 2008-2011; and Philadelphia Science Festival, April 2011

Drexel Observatory Crew
Lynch Observatory, Drexel University *December 2008 - June 2011*

- Participated in a group of undergraduate students who use the on campus Lynch Observatory for amateur observing and imaging
- Assisted the Physics Department with conducting monthly Observatory Open Houses

Pennoni Honors College Student Mentor
Pennoni Honors College, Drexel University *September 2008 - June 2011*

- Served as mentor for six freshmen students in physics and math