Adriana Stohn

U.S. Citizenship

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Keywords: computational imaging, optical engineering, optical science, imaging, scatter, physical modelling, photonics

Education

Electrical and Computer Engineering, Ph.D. est. May 2025
Concentration: Imaging and Optics | Duke University GPA: 3.42
Selected Coursework: Holography, Statistical Optics, Lens Design, Image Processing, Nanophotonics

Optical Sciences and Engineering, B.S. May 2019
Minors: Electrical & Computer Eng., Math, Spanish | University of Arizona (UA) GPA: 3.71
Selected Coursework: Polarized Light and Polarimetry, Radiometry, Circuit Theory, Digital Logic

Experience

Graduate Research Assistant Jul. 2019 - Present
Duke U. ECE Dept., LENS Lab, Advisor: Dr. Michael Gehm

- Developing and testing an aerosol particle that should create a synthetic, asymmetric imaging environment
- Investigated how computational methods can permit imaging when the object is occluded by scattering media

Assistant Course Developer May 2023 - Present
Duke U., Center for Computational Thinking, Advisor: Dr. Akshay Bareja

- Assist in development of machine learning and ethics coursework for an undergraduate course at Duke

Mathematics Research Intern May 2019 - Jun. 2019
Sandia National Laboratories, Mission Algorithms, Advisor: Dr. Edward Jimenez

- Assisted in the development of a mathematical model of a spectral X-Ray computed tomography (CT) system using a particle transport simulation code (PHITS)

Undergraduate Research Assistant Apr. 2016 - Apr. 2019
UA College of Optical Sciences, Polarization Lab, Advisor: Dr. Russell Chipman

- Developed Python code to command IR camera for use in experiment
- Operated IR and visible polarimeters to collect quantitative data

Optical Engineering Intern Jun. 2018 - Oct. 2018
GEOST, Inc., Supervisor: Adam Wade

- Developed image processing routine in Python to assign astronomical coordinates to stars in full-sky images
- Characterized the distortion in a fisheye lens to calculate a linearization correction

Mathematic Research Intern May 2017 - Aug. 2017
Sandia National Laboratories, Software Systems, Advisor: Dr. Edward Jimenez

- Developed a neural network machine learning method to learn and correct the spectral distortion and increase sign to noise ratio in a spectral X-Ray detector
- Designed and carried out experimentation to characterize the spectral distortion in a spectral X-Ray detector

Technical Tools

MATLAB, Python, OpticStudio Zemax, Wolfram Mathematica, COMSOL Multiphysics

Publications

Asymmetric imaging in the presence of a bright interference, M. Martinez, A. Stohn, M. E. Gehm, (in preparation).

High-fidelity calibration and characterization of a spectral computed tomography system, Isabel O. Gallegos, Gabriella M. Dalton, Adriana M. Stohn, Srivathsan P. Koundinyan, Kyle R. Thompson, Edward S. Jimenez, Proc. SPIE 11114, Hard X-Ray, Gamma Ray, and Neutron Detector Physics XXI, 111141G (3 October 2019).

LWIR Spectro-Polarimeter for Cloud-Induced Polarization Measurements, K. Hart, R. Chipman, L. Wu, M. Vega, and A. Stohn. 99th American Meteorological Society Annual Meeting (2019).

- Contribution: Built environmental chamber to calibrate LWIR camera, developed script in Python to operate LWIR camera

Leveraging Multi-Channel X-Ray Detector Technology to Improve Quality Metrics for Industrial and Security Applications, Edward S. Jimenez, Kyle R. Thompson, Adriana Stohn, Ryan N. Goodner, Proc. SPIE 10393, Radiation Detectors in Medicine, Industry, and National Security XVIII, 103930G (2017).

- Contribution: investigated spectral distortion in spectral X-Ray detector used in study to culminate in full correction of distortions, collected spectral X-Ray data

Binary Classification of Mueller matrix images from an optimization of Poincaré coordinates, Meredith K. Kupinski, Jaden Bankhead, Adriana Stohn, and Russell Chipman, J. Opt. Soc. Am. A34, 983-990 (2017).

- Contribution: collected polarimetric data of materials by imaging in a Mueller matrix polarimeter

Patents

Calibration Method for a Spectral Computerized Tomography System, Edward S. Jimenez, Srivathsan Prabu Koundinyan, Isabel Gallegos, Adriana Stohn, and Gabriella Dalton, Patent #112637. [Issued: Mar. 1, 2022]

Automatic Method of Material Identification for Computer Tomography, Edward S. Jimenez, Isabel Gallegos, Adriana Stohn, Srivathsan Prabu Koundinyan, and Kyle R. Thompson, Patent #10908098. [Issued Feb. 2, 2021]

Presentations

"Towards creation of an asymmetric vision environment." *Talk*. SPIE Optics + Photonics (2023).
"Locating pseudophase vortices in speckle for memory effect imaging." *Poster.* Complex Nanophotonics Science Camp (2022).
"High-fidelity calibration and characterization of a hyperspectral computed tomography system." *Poster.* Sandia National Laboratories Intern Symposium (2019).
"Introductory Mueller matrix imaging polarimetry." *Presentation*. Sandia National Laboratories (2019).
"Non-Destructive Material Identification via Spectral X-Ray Data." *Poster.* Sandia National Laboratories Intern Symposium (2017).
"Mueller Matric Measurements of Hands in the Near-IR for Feature Detection." *Presentation*. College of Optical Sciences Industrial Affiliates Spring Meeting (2017).
"Mueller Matrix Measurements of Hands in the Near-IR for Feature Detection." *Poster.* American Physical Society Conference for Undergraduate Women in Physics (2017).

Public Media Mentions

"These Days, Blockchain is Everywhere at Duke." *Article.* Duke TODAY. Aug. 2021.
"President Robbins chats with UA scientists about women in STEM…" *Video.* Youtube. Feb. 2019.
"Inspiring Women in STEM." *Article*. The University of Arizona Homepage. Feb. 2019.

Awards

Graduate

2023	SPIE Student Conference Support	SPIE
2023	Outstanding TA Award	ECE Dept, Duke U.
2023	Maclin Grant for Outreach	Pratt College of Engineering, Duke U.
2022	Maclin Grant for Outreach	Pratt College of Engineering, Duke U.
2021 – 2024	Graduate Research Fellow	National Science Foundation
2019 – 2024	Sloan Minority Ph.D. Scholar	Alfred P. Sloan Foundation
2019 – 2024	University Scholars Fellow	Duke University
2019 – 2023	Dean's Graduate Fellow	Duke University
2019 – 2020	John T. Chambers Fellow	Fitzpatrick Institute for Photonics, Duke U.
2019 – 2020	Diversity Award	ECE Department, Duke U.

Undergraduate

2019	Outstanding Senior, Class of 2019	College of Optical Sciences, UA
2018 - 2019	John E. Greivenkamp Endowed Scholarship	College of Optical Sciences, UA
2018 – 2019	James M. Palmer Endowed Scholarship	College of Optical Sciences, UA
2017 – 2018	Dean's Fund for Excellence Award	College of Optical Sciences, UA
2015 - 2019	Wildcat Excellence Award	The University of Arizona
2015 - 2019	Thomas R. Brown Distinguished Scholarship	Thomas R. Brown Foundation
2015 - 2016	Wildcat Alumni Association Scholarship	The University of Arizona
2014	National Hispanic Scholar	The College Board

Affiliations and Activities

Sep. 2022 – Present	Duke Science Policy Club (SPAcE)	Member
Dec. 2021 – April 2023	Duke Optical Student Chapter	President
Aug. 2019 – Present	Society of Duke Fellows	Member
Aug. 2019 – Present	University Scholars Program	Graduate Member
Jul. 2019 – Present	Sloan Scholar Program at Duke U.	Scholar
Feb. 2017 – April 2019	Girls Who Code, UA Chapter	Program Coordinator
Aug. 2015 – April 2019	Women in Optics, Women in Science & Engineering	Member