LAUREN ALTMAN

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EDUCATION AND EMPLOYMENT

University of Pennsylvania, Philadelphia, PA *January 2023 - Present*
Postdoctoral Fellowship

New York University, New York, NY *September 2017 - August 2022*
PhD, Physics
Center for Soft Matter Research

Brown University, Providence, RI *September 2012 - May 2016*
Bachelor of Science with Honors, Mathematical Physics

PUBLICATIONS

Machine Learning Enables Precise Holographic Characterization of Colloidal Materials in Real Time 2023
Lauren Altman, David Grier. Soft Matter. (Under Review)

Holographic Analysis of Colloidal Spheres Sedimenting in Horizontal Slit Pores 2022
Lauren Altman, David Grier. Physical Review E, 106, 044605

In-Line Holographic Microscopy with Model-Based Analysis 2022
Caroline Martin, Lauren Altman, Siddharth Rawat, Anna Wang, David Grier, Vinothan Manoharan. Nature Review Methods Primers, 2, 82

Holographic Tomography of Fractal Aggregates 2022
Rafe Abdulali, Lauren Altman, David Grier. Optics Express, 30(21), 38587-38595.

Holographic Characterization and Tracking of Colloidal Dimers in the Effective-Sphere Approximation 2021
Lauren Altman, Rushna Quddus, Fook Cheong, David Grier. Soft Matter, 17(10), 2695-2703.

Interpreting Holographic Molecular Binding Assays with Effective Medium Theory 2020
Lauren Altman, David Grier. Biomedical Optics Express, 11(9), 5225-5236.

CATCH: Characterizing and Tracking Colloids Holographically using Deep Convolutional Neural Networks 2020
Lauren Altman, David Grier. Journal of Physical Chemistry B, 124(9), 1602-1610.

PRESENTATIONS

Holographic Tracking of Jeffery Orbits in Colloidal Dimers and Ellipsoids 2022
Lauren Altman (NYU), David Grier (NYU), Rushna Quddus (NYU), Fook Cheong (Spheryx), ACS Fall Meeting 2022 (Invited Speaker)

Holographic Tracking of Jeffery Orbits in Colloidal Dimers and Ellipsoids 2022
Lauren Altman (NYU), David Grier (NYU), Rushna Quddus (NYU), Fook Cheong (Spheryx), APS March Meeting 2022, Volume 27, Number 11

Unsteady Sedimentation of a Colloidal Sphere in a Horizontal Channel 2020
Lauren Altman (NYU), David Grier (NYU), APS Virtual March Meeting 2020, Volume 65, Number 1

End-to-End Characterization of Colloidal Particles through Holographic Microscopy and Deep Convolutional Neural Networks 2019
Lauren Altman (NYU), David Grier (NYU), Mark D Hannel II (NYU), APS March Meeting 2019, Volume 64, Number 2

AWARDS AND APPOINTMENTS

Invention Disclosure, Holographic Densitometry and Holographic Pycnometry 2022
Lauren Altman and David Grier. New York University. (Patent Application)

Outstanding Graduate Student Instructor Award 2022
New York University

APS Division of Soft Matter Student Travel Award 2022
APS March Meeting

Graduate Representative, Equity and Inclusion Committee 2020 - 2021
New York University

Executive Board Member, NYU Women in Physics 2019 - 2020
New York University

R. Bruce Lindsay Prize for Excellence in Physics 2016
Brown University

RESEARCH EXPERIENCE

Graduate Research, NYU, New York, NY 2017 - 2022
Research Student *Advisor: David Grier*

UTRA Program, Brown University, Providence, RI 2015 - 2016
Research Student *Advisor: Marcus Spradlin*

Fermi National Accelerator Laboratory, Batavia, IL 2014
Research Student *Advisors: Meenakshi Narain, Ronald Lipton*

Lamont Doherty Earth Observatory, Palisades, NY 2013
Research Student *Advisor: Robin Bell*

TEACHING EXPERIENCE

NYU, New York, NY 2019 - 2022
Adjunct Instructor

· Graduate Thermodynamics and Statistical Mechanics
· Undergraduate General Physics II Lab
· Undergraduate Dynamics

NYU, New York, NY 2017 - 2022
Mentor

· Undergraduate and High School Students

Summit Educational Group, New Canaan, CT 2016
Tutor

· ACT Math and Science, AP Physics, Honors Physics, Algebra

Varsity Tutors, Westchester, NY 2016
Tutor

· IB Physics, College Physics, Algebra, Geometry, TABE Math

TECHNICAL SKILLS

GitHub	https://github.com/laltman2
Programming	Python, C++, Javascript, MatLab, Mathematica, LaTeX, LabView, HTML
Machine Learning	PyTorch, Tensorflow, Keras
Experimental	Video Microscopy, Optical Trapping, Holographic Particle Characterization