

Batia Friedman-Shaw

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Education

- 2023 – Now **Perimeter Institute/University of Waterloo**, Waterloo, ON, Canada
Ph.D. Candidate
- 2022 – 2023 **Perimeter Institute/University of Waterloo, PSI Program**, Waterloo, ON, Canada
M.Sc., Advisor: *Professor Robert C. Myers*
Research: AdS/CFT
- 2018 – 2022 **Brown University**, Providence, RI, United States
Sc. B., Advisor: *Professor Stephon Alexander*
Research: Theoretical Dark Energy, Machine Learning

Research & Projects

- 2023 – Now **Galaxy Survey Analysis Research**, Advisor: *Professor Will Percival*, Examining a new method of BAO information extraction.
- 2023 – Now **Galaxy Survey Analysis Research**, Advisor: *Professor Niayesh Afshordi*, Examining how gravitationally influenced galaxy velocities effect galaxy target selection and subsequent cosmological observables.
- 2022 – 2023 **Holography Research**, Advisor: *Professor Robert C. Myers*, Explored scattering around holographic black holes.
- 2022 **Physics Hackathon Creation**, Project Leader: *Professor Richard Gaitskell*, Creating a coding competition to expose Brown University physics concentrators to machine learning methods.
- 2021 – 2022 **Dark Energy Research**, Advisor: *Professor Stephon Alexander*, Examining whether a newly proposed model of dark matter and dark energy fits with well-established cosmology.
- 2020 – 2021 **Physics and Machine Learning Project**, Advisor: *Professor Stephon Alexander*, Developed a primer on machine learning to help researchers apply ML in all fields of physical science.
- 2021 – 2022 **Quantum Field Theory Renormalization Research**, Advisor: *Professor Jeremy Kahn*, Explored the use of analytic continuation to define specific renormalization methods more rigorously.
- 2019 – 2020 **Quantum Chemistry Computational Project**, Advisor: *Professor Brenda Rubenstein*, Developed software used to determine Hamiltonians and their approximate associated energy for arbitrary 2D Ising models.

Paper

The Physics of Machine Learning: An Intuitive Introduction for the Physical Scientist

By Stephon Alexander, Sarah Bawabe, Batia Friedman-Shaw, Michael Toomey

authorship is listed alphabetically

arXiv:2112.00851 [cond-mat.dis-nn]

Teaching

2019 – 2022 **Hebrew & Religious Studies Teacher**, Temple Beth El, Providence, RI.

Fall 2021 **Grader**, *Math 180*, Multivariable Calculus, Brown University.

Summer 2021 **Teaching Assistant**, *Math 0180*, Multivariable Calculus, Brown University.

Summer 2021 **Grader**, Pre-College Quantum Mechanics, Brown University.

Spring 2021 **Teaching Assistant**, *Phys 0070*, Analytical Mechanics, Brown University.

Fall 2020 **Teaching Assistant**, *Phys 1420*, Quantum B, Brown University.

Honors & Awards

2022 **Magna Cum Laude**, *Brown University*, (Highest Distinction at Brown).

2022 **Honors in Physics**, *Brown University Physics Department*.

2022 **Sigma Xi Honors Society**.

2021 **Sigma Pi Sigma Honors Society**, *Brown University Society of Physics Students*.

2019 **UTRA**, *Brown University Teaching and Research Award*.

Presentations

1. *Doppler Effect in Galaxy Surveys*, Women in Physics Canada Conference (2023)
2. *Doppler Effect in Galaxy Surveys*, PSI Winter School Conference (2023)
3. *Identity Theft: The story of how Dark Energy Masqueraded as Matter and Radiation*, Conference for Undergraduate Women in Physics (2022)
4. *Identity Theft: The story of how Dark Energy Masqueraded as Matter and Radiation*, Society of Physics Students Chapter Meeting (2022)
5. *Identity Theft: The story of how Dark Energy Masqueraded as Matter and Radiation*, Brown Physics Departmental Undergraduate Group 'Scialogue' Presentation (2021)
6. *Making Waves: Approximating Solutions to the Hubbard Model Using the Power Method*, Brown Physics Departmental Undergraduate Group 'Scialogue' Presentation (2020)
7. *Making Waves: Approximating Solutions to the Hubbard Model Using the Power Method*, Brown University Summer Research Symposium (2019)

Organizations & Outreach

2023 – Now **Waterloo Center for Astrophysics (WCA) Outreach**, Partake in organizing Astronomy on Tap, Kitchener Public Library Talks, and Travelling Planetarium Shows.

2023 – Now **Member**, *University of Waterloo Physics Graduate Student Association (GSA)*.

2018 – 2022 **Member**, *Brown Physics Women in Science and Engineering (WiSE) Club*.

2019 **Coordinator**, *Brown Physics Departmental Undergraduate Group*.

2018 – 2022 **Member**, *Brown Physics Departmental Undergraduate Group*.

2017 – 2018 **Head Science Tutor Coordinator**, *Berkeley Preparatory School*.

2015 – 2018 **Science Tutor**, *Berkeley Preparatory School*.

Skills

Computer Python, Julia, LaTeX, Mathematica, MATLAB, Maple, Markdown, HTML & CSS, Java, Adobe Illustrator, Inkscape, Photoshop

Personal Communication, Creativity, Teaching, Lesson Planning, Perseverance, Problem Solving