Batia Friedman-Shaw

Phone: (813)455-1163
batia.friedmanshaw@gmail.com
http://batia.me

Education

2022 – Now **Perimeter Institute**, Waterloo, ON, Canada
Master's Student

2018 – 2022 **Brown University**, Providence, RI, United States
Sc. B., Advisor: *Professor Stephon Alexander*
Research: Theoretical Dark Energy, Machine Learning

Research & Projects

2022 – Now **Physics Hackathon Creation**, *Project Leader: Professor Richard Gaitskell*, Creating a coding competition to expose Brown University physics concentrators to machine learning methods.

2021 – Now **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*.

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

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

Presentations

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

Organizations & Outreach

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, LaTeX, Mathematica, MATLAB, Maple, Markdown, HTML & CSS, Java, Adobe Illustrator, Photoshop

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