

Contact	Dana Research Center 237, 110 Forsyth St., Boston, MA 02115, USA Citizenship: Indian	Personal website maiti.a@northeastern.edu
Education	<p>Northeastern University – Boston, USA 2017-2023 PhD Candidate (Physics) Advisor: James Halverson</p> <p>The NSF AI Institute for Artificial Intelligence and Fundamental Interactions – Boston PhD Student 2020-2023</p> <p>Indian Institute of Technology Bombay – Mumbai, India 2012-2017 Integrated Bachelor and Master of Technology (Engineering Physics) with Honors (Physics) Advisor: Urjit Yajnik</p>	
Research Interests	<p>Foundational Machine Learning \leftrightarrow Theoretical High Energy Physics.</p> <p>Theoretical Physics, Applied Maths for Machine Learning Theory.</p> <p>Machine Learning for String Phenomenology, Effective Field Theories.</p> <p>Machine Learning for Quantum Many-body Physics, Quantum Computations.</p>	
Preprints & Publications	<p>M. Demirtas, James Halverson, A. Maiti, K. Stoner, M. D. Schwartz, “<i>Locality and Non-Gaussianity in Neural Network Field Theories</i>”, (to appear).</p> <p>A. Maiti, K. Stoner, and J. Halverson, “<i>Symmetry-via-Duality: Invariant Neural Network Densities from Parameter-Space Correlators</i>”, [arXiv:2106.00694v1], (in press).</p> <p>J. Halverson, C. Long, A. Maiti, B. Nelson, G. Salinas, “<i>Gravitational waves from dark Yang-Mills sectors</i>”, <i>JHEP</i> 05 (2021), 154, [arXiv:2012.04071].</p> <p>J. Halverson, A. Maiti, and K. Stoner, <i>Neural Networks and Quantum Field Theory</i>, <i>Mach. Learn. Sci. Tech.</i> 2 (2021) no. 3, 035002, [arXiv:2008.08601].</p>	
In-Progress	“ <i>Reinforcement Learning Exploration of Chiral Gauge Theories</i> ” - with James Halverson.	
Seminars, Talks, Colloquia	<p>New Frontiers in Machine Learning and Quantum, Perimeter Institute Nov 2022</p> <p>Oxford Dalitz Seminar in Fundamental Physics, Oxford University Nov 2022</p> <p>UCI Physics Astro/Particle-ML Seminar Series, UC Irvine Oct 2022</p> <p>Theoretical Particle Physics & Cosmology Seminar, King’s College London Oct 2022</p> <p>Mathematics Seminar, City, University of London Oct 2022</p> <p>Theoretical Physics Seminar, Uppsala University Oct 2022</p> <p>Majorana-Raychaudhuri Seminar Series, INFN & University Salerno, Italy & PAMU, Indian Statistical Institute, Kolkata, India Sept 2022</p> <p>Journal Club, The NSF AI Institute for A. I. and Fundamental Interactions Sept 2022</p> <p>Computational Algebra Seminar Series, University of Nottingham, UK Sept 2022</p> <p>Pehlevan Research Group Journal Club, Harvard University [slides] Aug 2022</p> <p>Poster Session: Summer Workshop 2022, The NSF AI Institute for Artificial Intelligence and Fundamental Interactions Aug 2022</p> <p>Parallel Session: String Phenomenology 2022, University of Liverpool [slides] Jul 2022</p> <p>Short Talks: A Deep-Learning Era of Particle Theory, Mainz Institute for Theoretical Physics, Johannes Gutenberg University [slides] June 2022</p> <p>Lightning Talks on Discovering Latent Structure in Artificial and Physical Systems, The NSF AI Institute for Artificial Intelligence and Fundamental Interactions [slides] May 2022</p>	

Lightning Session: IAIFI-AIMLAC Workshop, The NSF AI Institute for Artificial Intelligence and Fundamental Interactions [\[slides\]](#) Mar 2022

String Data 2021, University of Witwatersrand & University of Cape Town [\[slides\]](#) Dec 2021

QFT Research Seminar, Institute for Theoretical Physics - Münster (WWU) [\[slides\]](#) May 2021

Joint High Energy Theory and Machine Learning Seminar, Heidelberg University, LMU Munich and Northeastern University [\[slides\]](#) May 2021

Journal Club, The NSF AI Institute for A. I. and Fundamental Interactions [\[slides\]](#) Feb 2021

Seminar Series on String Phenomenology [\[slides\]](#) Oct 2020

Gong Show: String Data 2020, CERN [\[slides\]](#) Dec 2020

Gong Show: Strings, Geometry, and Data Science, Simons Center for Geometry and Physics, Stony Brook University [\[slides\]](#) Jan 2020

Awards and Honors

Travel Grants: “New Frontiers in Machine Learning and Quantum” Workshop by Perimeter Institute (Nov 2022); Northeastern University Dept. of Physics (Summer 2022); Northeastern University PhD Network (Summer 2022).

Dean’s Graduate Student Excellence Award in Research: Northeastern University College of Science (Spring 2021).

Lawrence Award for Graduate Academic Excellence: Northeastern University Dept. of Physics (Spring 2018).

Indian Academy of Sciences Summer Research Fellowship: Indian Academy of Sciences, (Summer 2014).

Summer Schools

- IAIFI Summer School, Aug 2022, The NSF AI Institute for Artificial Intelligence and Fundamental Interactions.
- Theoretical Advanced Study Institute in Particle Theory (TASI), June 2021, CU Boulder.
- Deep Learning Theory Summer School at Princeton, Jul 2021, Princeton University.

Teaching Experience

TEACHING ASSISTANT – Northeastern University, Boston, Massachusetts

PHYS 7325: Quantum Field theory 1 (Fall 2020, Fall 2019)
 PHYS 5115: Quantum Mechanics (Spring 2020, Spring 2019)
 PHYS 3601: Classical Dynamics (Fall 2018)
 PHYS 2305: Thermo and Statistical Mechanics (Spring 2018)
 PHYS 1155: Physics Lab for Engineering 2 (Fall 2017)
 PHYS 3600: Advanced Physics Lab (multiple semesters)
 Undergraduate Physics lab (multiple semesters)

TEACHING ASSISTANT – IIT Bombay, Mumbai, India

PH 117: Undergraduate Physics lab (Spring 2017)
 EP 215: Undergraduate Electronics lab (Fall 2016)

References

- (1) DR. JAMES HALVERSON, (*Email: j.halverson@northeastern.edu*), Associate Professor, Dept. of Physics, Northeastern University, The NSF AI Institute for Artificial Intelligence and Fundamental Interactions.
- (2) DR. FABIAN RUEHLE, (*Email: f.ruehle@northeastern.edu*), Assistant Professor, Dept. of Physics, Northeastern University, The NSF AI Institute for Artificial Intelligence and Fundamental Interactions.
- (3) DR. BRENT NELSON, (*Email: B.Nelson@northeastern.edu*), Associate Dean and Associate Professor, Dept. of Physics, Northeastern University, The NSF AI Institute for Artificial Intelligence and Fundamental Interactions.

Technical skills

Programming languages: Python, C, C++, Mathematica, Matlab, Pytorch.
Software: \LaTeX , Git.

Professional Service Activities

OUTREACH TO HIGH SCHOOL STUDENTS: Presented HEP-th research at Northeastern. (Jul 2022)

MEMBER, EARLY CAREER AND EQUITY COMMITTEE: The NSF AI Institute for Artificial Intelligence and Fundamental Interactions. (Jan 2021 - Dec 2022)

MEMBER, GRADUATE STUDENT COUNCIL: Northeastern University College of Science. (Sept 2020 - Aug 2022)

COORDINATOR & INITIATOR, GRADUATE WOMEN IN PHYSICS SOCIETY: Northeastern University Dept. of Physics. (Sept 2021 - Present)

REFeree: NeurIPS 2022 workshop on Machine Learning and the Physical Sciences; NeurIPS 2021 workshop on Machine Learning and the Physical Sciences; 'Foundations of Physics' Journal; NeurIPS 2020 workshop on Machine Learning and the Physical Sciences.

VOLUNTEER & CO-ORGANIZER: The 1st International Electronic Conference on Mathematics and Applications (May, 2023); String Phenomenology 2020 (Northeastern University).