Anindita Maiti

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Department of Physics, Northeastern University
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Education

2017 – Present **Northeastern University**, Boston, Massachusetts, USA
Doctor of Philosophy in Physics Candidate
Advisor: James Halverson.
Affiliated member at The NSF AI Institute for Artificial Intelligence and Fundamental Interactions (2020 - Present)

2012 – 2017 **IIT Bombay**, Mumbai, India
Integrated Bachelor and Master of Technology in Engineering Physics
Advisor: Urjit Yajnik. *(Graduated with Honors in physics).*

Research Interests

AI and Machine Learning in fundamental physics and string theory, Fundamentals of Artificial Intelligence, String Theory, Particle Physics

Publications

A. Maiti, K. Stoner, and J. Halverson, *Symmetry-via-Duality: Invariant Neural Network Densities from Parameter-Space Correlators*, [arXiv:2106.00694v1] .

J. Halverson, C. Long, **A. Maiti**, B. Nelson, G. Salinas, *Gravitational waves from dark Yang-Mills sectors*, JHEP **05** (2021), 154, [arXiv:2012.04071].

J. Halverson, **A. Maiti**, and K. Stoner, *Neural Networks and Quantum Field Theory*, Mach. Learn. Sci. Tech. **2** (2021) no. 3, 035002, [arXiv:2008.08601].

Ongoing Projects

Locality in NN-QFT Correspondence - with James Halverson, Keegan Stoner, Matthew D. Schwartz (ongoing)

RL Exploration of Chiral Gauge Theories - with James Halverson (ongoing)

Grassmann Neural Networks - with James Halverson, Fabian Ruehle, Casey Pancoast (ongoing)

Invited Conference Talks and Colloquia

Dec 2021 — TBA
Plenary Session Talk, **String Data 2021**, *University of the Witwatersrand and University of Cape Town*

May 2021 — NN-QFT Correspondence and Symmetries via Duality
QFT Research Seminar, *Institute for Theoretical Physics - Münster (WWU)*

May 2021 — NN-QFT Correspondence and Symmetries
Joint High Energy Theory & Machine Learning Seminar - *Heidelberg University, LMU Munich and Northeastern University*

Oct 2020 — The NN-QFT Correspondence
Seminar Series on **String Phenomenology**

Jan 2020 — RL Exploration of Chiral Gauge Theories
Gong Show Talk, **Strings, Geometry, and Data Science**, *Simons Center for Geometry and Physics*

Contributed Talks

June 2021 — Neural Networks - QFT Correspondence
TASI 2021, Gong Show Talk

Feb 2021 — The NN-QFT Correspondence
Journal Club, *The NSF AI Institute for Artificial Intelligence and Fundamental Interactions*

Dec 2020 — Output Dimension Effects in Untrained NN
Gong Show Talk, **String Data 2020**, *CERN*

Oct 2020 — The NN-QFT Correspondence
Seminar Series on String Phenomenology

Awards and Honors

Spring 2021 — Dean's Graduate Student Excellence Award in Research (Northeastern University College of Science)

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

Summer 2014 Indian Academy of Sciences Summer Research Fellowship (Indian Academy of Sciences)

Schools Attended

Deep Learning Theory Summer School at Princeton, Princeton University Jul 2021

Theoretical Advanced Study Institute (TASI) – *Black Holes, Quantum Information, and Dualities*, University of Colorado, Boulder June 2021

Professional Service Activities and Outreach

Referee: NeurIPS 2021 workshop on Machine Learning and the Physical Sciences; Foundations of Physics; NeurIPS 2020 workshop on Machine Learning and the Physical Sciences

Member: Graduate Student Council, Northeastern University College of Science (Sept 2020 - Present)

Member: Early Career and Equity Committee, The NSF AI Institute for Artificial Intelligence and Fundamental Interactions. (Jan - Dec 2021)

Coordinator & Initiator: Graduate Women in Physics Society, Northeastern University Dept. of Physics (Sept 2021 - Present)

Volunteer: Contributed as a student organizer to String Phenomenology 2020, Northeastern University

Conferences Attended

String Data 2021, University of Witwatersrand & University of Cape Town Dec 2021

String Data 2020, CERN Dec 2020

String Phenomenology 2020, Northeastern University June 2020

Strings, Geometry, and Data Science, Simons Center for Geometry and Physics, Stony brook University Jan 2020

APS 2019 Meeting of the Division of Particles & Fields, Northeastern Jul 2019

Indian String Meeting 2018, IISER Thiruvananthapuram, India Dec 2018

F-Theory Conference, CMSA, Harvard University Sept 2018

Workshop on Data Science and String Theory, Northeastern University Nov 2017

Teaching

Northeastern University, Boston, Massachusetts

Teaching Assistant — 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)

Instructor — PHYS 1155: Physics for Engineering 2 (Fall 2017); Advanced Physics Lab - PHYS 3600; Undergraduate Physics lab - PHYS 1148, 1152, 1156; College of Professional Studies Physics Lab - PHYS 1201, 2201

IIT Bombay, Mumbai, India

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

Technical skills

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

References

(1) Professor James Halverson,
Dept. of Physics, Northeastern University,
The NSF AI Institute for Artificial Intelligence and Fundamental Interactions