Deven Misra

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Contact Information

Kavli Institute for the Physics and Mathematics of the Universe
The University of Tokyo
5-1-5 Kashiwanoha
Kashiwa City, Chiba Prefecture
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Research Interests

Experimental particle physics: heavy flavor physics, machine learning, and FPGA firmware development.

Accelerator physics: real-time modeling, beam-based optimization, and accelerator control.

Condensed matter physics: quantum phase transitions, percolation theory, nonlinear sigma models, and representation theory.

Current Academic Appointments

Graduate Student, The University of Tokyo — Oct. 2024 to present
Department of Physics
- Affiliations:
  - Kavli Institute for the Physics and Mathematics of the Universe (IPMU)
  - High Energy Accelerator Research Organization (KEK)
  - Center for Data-Driven Discovery (CD3)

Previous Academic Appointments

Research Assistant, Reed College — Oct. 2023 to Oct. 2024
Department of Physics
- Supervisor: Prof. Noah Charles

SULI Intern, Pacific Northwest National Laboratory — Sept. 2023 to Apr. 2024
Data Science & Machine Intelligence Group
- Supervisor: Dr. Jan Strube

Research Assistant, Reed College — May 2022 to Sept. 2022
Department of Physics
- Supervisor: Prof. Noah Charles

Visiting Undergraduate Researcher, Johns Hopkins University — May 2019 to Sept. 2019
Robot and Protein Kinematics Laboratory
- Supervisor: Prof. Gregory Chirikjian

Education

The University of Tokyo, Bunkyō-ku, Tokyo, JP

M.S. in Physics, Expected September 2026
- Thesis Topic: *Low-Latency On-Chip τ Event Selection with Machine Learning for the Belle II Level-1 Trigger*
- Adviser: Prof. Takeo Higuchi
- Area of Study: Experimental Particle Physics

Reed College, Portland, Oregon, US

B.S. in Physics, May 2022
- Thesis: *Multipole Moments of the Weyl-Lewis-Papapetrou Metric for an Axisymmetric Ring*
- Adviser: Prof. Joel Franklin

Refereed Conference Publications

[1] H. Wu, **D. Misra** and G. S. Chirikjian, "Is That a Chair? Imagining Affordances Using Simulations of an Articulated Human Body," 2020 IEEE International Conference on Robotics and Automation (ICRA), Paris, France, 2020, pp. 7240-7246, doi: 10.1109/ICRA40945.2020.9197384.

Conference Posters

[2] **D. Misra**, O. Lee, H. Saberhagen, D. Schroeter and N. Charles, "Geometrically Disordered Network Models for the Integer Quantum Hall Transition via Loop Diagram Insertions", 2024 APS March Meeting, Minneapolis, Minnesota, USA, March 2024.

Other Publications

[3] **D. Misra**, *Multipole Moments of the Weyl-Lewis-Papapetrou Metric for an Axisymmetric Ring*. Bachelor's Thesis, Reed College, Portland, OR, 2022.

Talks & Presentations

[1] "Low-Latency On-Chip τ Event Selection with Machine Learning for the Belle II Level-1 Trigger", Fast Machine Learning for Science Conference, ETH Zürich, September 2025.

[2] "Geometrically Disordered Network Models for the Integer Quantum Hall Transition", Workshop on the Physics and Mathematics of the Universe, Kavli IPMU, July 2025.

[3] "Low-Latency On-Chip τ Event Selection with Machine Learning for the Belle II Level-1 Trigger", ML4FE Workshop, University of Hawaii, May 2025.

[4] "Angle Reconstruction in High-Granularity Calorimeters with Graph Neural Networks", Pacific Northwest National Laboratory Research Symposium, Apr. 2023.

[5] "Calorimeter Energy Reconstruction with Machine Learning, Pacific Northwest National Laboratory Research Symposium", Dec. 2022.

[6] "Axisymmetric Ring Sources in General Relativity", Reed College Physics Seminar, May 2022.

Teaching Experience

Reed College, Portland, Oregon, US

Grader Jan. 2024 to May 2024

- Graded weekly assignments for Quantum Mechanics I (Physics 342).

Awards

The University of Tokyo, Bunkyō-ku, Tokyo, JP

- Global Science Graduate Course Scholarship, 2024 – 2029

Skills

Languages: Python, Julia, C++, Mathematica, LaTeX
Libraries: PyTorch, PyG, Brevitas, TensorFlow, JAX, Keras, QKeras, HGQ, hls4ml
Software: ROOT, DD4hep, Vitis, Vivado

Citizenship

United States of America