Yongbin Feng

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EMPLOYMENT

- 09/2024 - Present, **Assistant Professor of Physics**
  Texas Tech University, Department of Physics and Astronomy, Lubbock, Texas, USA
- 11/2020 - 08/2024, **Postdoctoral Research Associate**
  Fermi National Accelerator Laboratory, Particle Physics Division, Batavia, Illinois, USA

EDUCATION

- **University of Maryland, College Park**, College Park, Maryland, USA
  Ph.D. in Physics, 08/2015 - 10/2020
- **University of Science and Technology of China**, Hefei, Anhui, China
  B.S. in Physics, 08/2011 - 06/2015

PROFESSIONAL EXPERIENCE

- 05/2025 - Present, CMS Particle Flow Reconstruction Group L3 Convener
- 06/2024 - Present, Fast Machine Learning Coprocessor Group Coordinator
- 09/2023 - 08/2025, CMS Standard Model Group Vector Boson (SMP-V) L3 Convener
- 02/2022 - 09/2023, CMS Machine Learning Production Group L3 Convener

SELECTED PUBLICATIONS

Publications with significant contributions

- CMS Collaboration, "DeepMET: Improving missing transverse momentum estimation with a deep neural network", `arXiv:2509.12012`. Submitted to *Physics Review D*. (Analysis contact.)
- A. Apyan et al., "Performance measurements of the electromagnetic calorimeter and readout electronics system for the DarkQuest experiment", *Nucl. Instrum. Meth. A* **1080** (2025) 170792, doi: 10.1016/j.nima.2025.170792, `arXiv:2502.20590`
- H. Zhao et al., "Track reconstruction as a service for collider physics", *JINST* **20** (2025) P06002, doi: 10.1088/1748-0221/20/06/P06002, `arXiv:2501.05520`
- CMS Collaboration, "Measurement of the inclusive cross sections for W and Z boson production in proton-proton collisions at $\sqrt{s} = 5.02$ and 13 TeV", *JHEP* **04** (2025) 162, doi: 10.1007/JHEP04(2025)162, `arXiv:2408.03744`. (Analysis Contact.)
- CMS Collaboration, "Search for a resonance decaying to a W boson and a photon in proton-proton collisions at $\sqrt{s} = 13$ TeV using leptonic W boson decays", *JHEP* **09** (2024) 186, doi: 10.1007/JHEP09(2024)186, `arXiv:2406.05737`
- CMS Collaboration, "Portable Acceleration of CMS Computing Workflows with Coprocessors as a Service", *Comput. Softw. Big Sci.* **8** (2024) 17, doi: 10.1007/s41781-024-00124-1, `arXiv:2402.15366`. (Analysis Contact.)
- T. Li et al., "Semi-supervised graph neural networks for pileup noise removal", *Eur. Phys. J. C* **83** (2023) 99, doi: 10.1140/epjc/s10052-022-11083-5, `arXiv:2203.15823`

- A. Apyan et al., "DarkQuest: A dark sector upgrade to SpinQuest at the 120 GeV Fermilab Main Injector", March, 2022. arXiv:2203.08322
- CMS Collaboration, "Search for new particles decaying to a jet and an emerging jet", *JHEP* **02** (2019) 179, doi: 10.1007/JHEP02(2019)179, arXiv:1810.10069

Publications with involvement

- CMS Collaboration, "High-precision measurement of the W boson mass with the CMS experiment at the LHC", arXiv:2412.13872. Submitted to *Nature*
- H. Zhao et al., "Graph Neural Network-based Tracking as a Service", Feburary, 2024. arXiv:2402.09633
- CMS Collaboration, "Measurements of the inclusive W and Z boson production cross sections and their ratios in proton-proton collisions at $\sqrt{s} = 13.6$ TeV", arXiv:2503.09742. Submitted to *JHEP*
- M. Agarwal et al., "Applications of Deep Learning to physics workflows", June, 2023. arXiv:2306.08106
- S. Liu et al., "Structural Re-weighting Improves Graph Domain Adaptation", in *Proceedings of the 40th International Conference on Machine Learning (ICML)*, volume 202 of *Proceedings of Machine Learning Research*, p. 21778. July, 2023
- P. Harris et al., "Physics Community Needs, Tools, and Resources for Machine Learning", in *2022 Snowmass Summer Study*. March, 2022. arXiv:2203.16255
- C. Papageorgakis et al., "Dose rate effects in radiation-induced changes to phenyl-based polymeric scintillators", *Nucl. Instrum. Meth. A* **1042** (2022) 167445, doi: 10.1016/J.NIMA.2022.167445, arXiv:2203.15923

SEMINARS and COLLOQUIUMS

- *Advancing Energy Measurements in Collider Experiments with Machine Learning*
  Seminar presented at the A3D3 Seminar, virtual, March 2025
- *Looking into Dark Sector with a proton fixed-target experiment at Fermilab - DarkQuest*
  Seminar presented at the High Energy Physics Seminar, University of Florida, Gainesville, Florida, USA, November 2024
- *Towards better machine-learning model deployment - Inference as a service*
  Seminar presented at the Fermilab lab-wide AI meetings, Batavia, Illinois, USA, June, 2024
- *Towards Preciser Examinations of the Standard Model*
  Seminar presented at the HEP Seminars of the University of Maryland, College Park, Maryland, USA, March 2024
- *Towards Preciser Examinations of the Standard Model*
  Seminar presented at the HEP Seminars of Purdue University, West Lafayette, Indiana, USA, February 2024
- *Pushing the Precision Boundary of the Standard Model with Modern Tools*
  Colloquium of Department of Physics and Astronomy at Texas Tech University, Lubbock, Texas, USA, February 2024
- *DarkQuest*
  Seminar presented at Karlsruhe Institute of Technology, Karlsruhe, Germany, July 2023
- *Introduction to Graph Neural Networks*
  Seminar presented at the Fermilab lab-wide AI meetings, Batavia, Illinois, USA, November 2022

- *DarkQuest - Probing dark sector with a proton fixed-target experiment at Fermilab*
  Seminar presented at the SYSU-PKU Particle Physics Forum, Virtual, May 2022.

- *Semi-supervised graph neural network for pileup noise removal*
  Seminar presented at the University of Washington Machine Learning Forum, Virtual, May 2022.

- *Search for emerging jets and other long-lived states with the CMS experiment*
  Seminar presented at Experimental particle physics seminars of the University of Pennsylvania, Philadelphia, Pennsylvania, USA, November 2019.

CONFERENCE TALKS and POSTERS

- *DeepMET - Improving missing transverse momentum estimation with a deep neural network*
  Talk presented at the BOOST workshop, Providence, Rhode Island, USA, July 2025

- *Recent electroweak precision measurements in CMS*
  Talk presented at the LHC Physics Conference (LHCP 2024), Boston, Massachusetts, USA, June 2024

- *Portable Acceleration of CMS Production Workflow with Inference as a service*
  Poster presented at the Advanced Computing and Analysis Techniques in Physics Research (ACAT) 2024, Stony Brook, New York, USA, March 2024

- *Low pileup fiducial measurements in CMS*
  Talk presented at the LHC electroweak precision subgroup meeting, CERN, Switzerland, November 2023

- *DarkQuest - Probing dark sector with a proton fixed-target experiment at Fermilab*
  Invited talk presented at the 2023 Aspen Conference for Physics, Aspen, Colorado, USA, March 2023

- *Exa.TrkX inference as-a-service*
  Talk presented at the Fast Machine Learning Workshop, Dallas, Texas, USA, October 2022

- *DarkQuest - Searching for light dark matter with a proton fixed-target experiment at Fermilab*
  Talk presented at the 2022 Phenomenology Symposium, Pittsburgh, Pennsylvania, USA, May 2022.

- *Semi-supervised machine learning for pileup per particle identification with graph neural networks*
  Talk presented at the 2021 BOOST workshop, Virtual, August 2021.

- *Searching for light dark matter at Fermilab's proton-fixed target experiment: DarkQuest*
  Talk presented at the 2021 Particle Physics and Cosmology Workshop, Norman, Oklahoma, USA, May 2021.

- *Search for new particles decaying into a jet and an emerging jet*
  Poster presented at the 2019 Winter LHCC meeting Students Poster Session, CERN, Geneva, Switzerland, February 2019.

- *Search for New Physics with Emerging Jets*
  Talk presented at the 2018 APS April Meeting, Columbus, Ohio, USA, April 2018.

TEACHING EXPERIENCE

- *Instructor*, PHYS 3306 Electricity and Magnetism II, Texas Tech University, Spring 2025 (9 students)

- *Instructor*, PHYS 3305 Electricity and Magnetism I, Texas Tech University, Fall 2024 (12 students), Fall 2025 (31 students)

- *Lecturer*, Hands-on demo of coprocessors as a service with SONIC at Computational HEP Traineeship Summer School, Fermilab, May 2024

- *Lead Facilitator*, Inference Hands-on session of the CMS Machine Learning Town Hall, CERN, July 2021

- *Lead Facilitator*, MET short exercise of CMS Data Analysis School (DAS) and LPC Hands-on Tutorial Sessions (HATS), Top mass measurement long exercise of CMS DAS 2022, Fermilab, January 2021 - January 2024
- *Facilitator*, Search for structures in the J/ψJ/ψ mass spectrum long exercise of CMS DAS 2024, HH($b\bar{b}b\bar{b}$) long exercise of CMS DAS 2021, Machine Learning Hands-on Advanced Tutorial (HATS) of the LHC Physics Center (LPC) HATS, Fermilab, January 2021 - January 2024
- *Teaching Assistant*, PHYS276 Electronics Lab, 3 sessions, about 40 students, Maryland, Fall 2015
- *Teaching Assistant*, Introduction to Electromagnetism (for first-year physics major undergraduate students), about 90 students, USTC, Spring 2015

STUDENTS SUPERVISED

Graduate students

- Harry Brittan (06/2025 - Now)
- Valdis Slokenbergs (09/2024 - Now)

Undergraduate students

- Elizabeth Veraa (03/2025 - Now)

SCHOLARSHIPS

- National Endeavor Scholarship, USTC, 2013
- Outstanding Student Scholarship (First Class), USTC, 2013, 2014, 2015
- Industrial Responsibility Scholarship, USTC, 2012

ORGANIZED ACTIVITIES

- Scientific Organizing Committee, Thrid Annual US-FCC workshop, 2025
- Co-organizer, LPC Physics Forum, 2022 - 2025
- Local Organizer, CERN-Fermilab Collider Physics Summer School, 2022

DEPARTMENT SERVICES

- Physics graduate student prelim exam committee (Oral part), 08/2025
- PhD thesis proposal committee member for Aaron Mankel, 05/2025

OUTREACH ACTIVITIES

- *69th South Plains Regional Science and Engineering Fair*
  Judge reviewing local high school students scientific research activities and posters, 02/2025
- *Discussion on the 2024 Nobel Prize of Physics in Machine Learning*
  Public lecture presented at the physics department, Texas Tech University, Lubbock, Texas, USA, 11/2024