Accelerator ML Living Review

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Papers

Geoff: The Generic Optimization Framework & Frontend for Particle Accelerator Controls
Penelope Madysa, Sabrina Appel, Verena Kain, Michael Schenk (2025)
arXiv

Towards Agentic AI on Particle Accelerators
Antonin Sulc, Thorsten Hellert, Raimund Kammering, Hayden Hoschouer, Jason St. John (2025)
arXiv

Acceleration of Multi-Scale LTS Magnet Simulations with Neural Network Surrogate Models
Louis Denis, Julien Dular, Vincent Nuttens, Mariusz Wozniak, Benoît Vanderheyden, Christophe Geuzaine (2025)
arXiv

Application Of Large Language Models For The Extraction Of Information From Particle Accelerator Technical Documentation
Qing Dai, Rasmus Ischebeck, Maruisz Sapinski, Adam Grycner (2025)
arXiv

Accelerating Transformers in Online RL
Daniil Zelezetsky, Alexey K. Kovalev, Aleksandr I. Panov (2025)
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Towards generalizable deep ptychography neural networks
Albert Vong, Steven Henke, Oliver Hoidn, Hanna Ruth, Junjing Deng, Alexander Hexemer, Apurva Mehta, Arianna Gleason, Levi Hancock, Nicholas Schwarz (2025)
arXiv

TrackFormers Part 2: Enhanced Transformer-Based Models for High-Energy Physics Track Reconstruction
Sascha Caron, Nadezhda Dobreva, Maarten Kimpel, Uraz Odyurt, Slav Pshenov, Roberto Ruiz de Austri Bazan, Eugene Shalugin, Zef Wolffs, Yue Zhao (2025)
arXiv

FusionMAE: large-scale pretrained model to optimize and simplify diagnostic and control of fusion plasma
Zongyu Yang, Zhenghao Yang, Wenjing Tian, Jiyuan Li, Xiang Sun, Guohui Zheng, Songfen Liu, Niannian Wu, Rongpeng Li, Zhaohe Xu, Bo Li, Zhongbing Shi, Zhe Gao, Wei Chen, Xiaoquan Ji, Min Xu, Wulyu Zhong (2025)
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A Surrogate model for High Temperature Superconducting Magnets to Predict Current Distribution with Neural Network
Mianjun Xiao, Peng Song, Yulong Liu, Cedric Korte, Ziyang Xu, Jiale Gao, Jiaqi Lu, Haoyang Nie, Qiantong Deng, Timing Qu (2025)
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TrackFormers Part 2: Enhanced Transformer-Based Models for High-Energy Physics Track Reconstruction
Caron, Sascha, Dobreva, Nadezhda, Kimpel, Maarten, Odyurt, Uraz, Pshenov, Slav, Bazan, Roberto Ruiz de Austri, Shalugin, Eugene, Wolffs, Zef, Zhao, Yue (2025)
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Fast, accurate, and precise detector simulation with vision transformers
Favaro, Luigi, Giammanco, Andrea, Krause, Claudius (2025)
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The promise of artificial intelligence-assisted radiotherapy for prostate cancer in Morocco: a transformational opportunity
Fadila Kouhen, Meryem Naciri, Hanae El Gouache, Nadia Errafiy, Abdelhak Maghous (2025)
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