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Track reconstruction in silicon strip detector of MuonE experiment with Graph Neural Networks

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The MUonE experiment aims to measure the hadronic contribution to the muon magnetic moment. To achieve this the reconstruction of muon-electron pair in the silicon strip detector should be done fast to include the information in the trigger system. In this work we present the Graph Neural Network (GNN) approach to the tracking using simulated MuonE events. For the first time we test the GNN pattern recognition in three dimensions. The tracking is tested on a simulated configuration featuring three tracking stations. In addition the particle identification is performed by the same GNN network to identify the reconstructed tracks as originating from muon or electron.

Significance

This contribution covers the next development steps comparing to the presentation from Chep 2024. This is the first presentation of Graph Neural Network tracking for MuonE

References

<https://indico.cern.ch/event/1338689/contributions/6015408/>

Experiment context, if any

MuonE future experiment at CERN

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