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Machine learning techniques for optimization of track selection criteria

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Application of machine learning (ML) algorithms in high-energy physics is evolving rapidly. One of the ways to improve the analysis of experimental data is to optimize track selection criteria. UsingMonte Carlo simulations, one can train ML classifiers to separate correctly reconstructed primary tracks from secondary and fake tracks based on their features such as a number of clusters in TPCs, distance of closest approach to an interaction vertex etc.

In this contribution we present the procedure of track selection optimization based on ML techniques and applied to EPOS1.99 simulations of proton-proton interactions obtained via Shine Offline Framework. In case of a complex geometry of an experimental facility such as NA61/SHINE improvement of track selection leads to a modification of the kinematical acceptance.

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