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Forward muon track reconstruction between multiple detectors using machine learning in ALICE Run 3

Tuesday 25 April 2023 17:00 (20 minutes)

A new detector was installed in ALICE in the forward region during LHC LS2 with the aim to improve the accuracy of the dimuon opening angle measurement more than ever since the LHC Run 3. Such new detector cannot identify muons and measure their momentum, so it must be used in combination with an existing detector. Therefore, it is necessary to correctly match the tracks reconstructed by each detector. However, the huge amount of tracks due to high-multiplicity events such as HIC and the Coulomb multiple scattering inside the thick layer of material between the new and existing detectors for muon identification pose challenges. In this talk, we will show how machine learning can be used to correctly match these tracks and evaluate their performance using purity and efficiency. We will also discuss results obtained applyng machine learning techniques to the reconstruction of the invariant mass distributions.

Theory / experiment

Experiment

Group or collaboration name

ALICE Collaboration

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Session Classification: Poster Session

Track Classification: Experimental techniques and future programs