

Contribution ID: 200

Type: Parallel

Tracking and PID performance with the upgraded LHCb detector

Tuesday 8 July 2025 16:50 (20 minutes)

The LHCb experiment underwent a major upgrade in LHC Long Shutdown 2 and has been taking data in Run 3 at a five times higher instantaneous luminosity of 2×10^{33} cm⁻² s⁻¹. The tracking detectors are all newly constructed and the particle identification detectors have been substantially upgraded with new frontend and backend electronics, allowing for the lowest level hardware trigger to be removed and all subdetectors to be read out at the full LHC bunch crossing rate of 40 MHz. An all-software trigger then processes the full event information in two stages, where the first stage is implemented on GPU cards and the second stage on CPUs servers. In this presentation we will cover the performance of the new track reconstruction and particle identification and show how the improved granularity of the detectors help not only to maintain but even to improve on the previous LHCb detector performance in many key areas, paving the way for precise flavor physics measurements. We will focus on the results of the 2024 data taking year, the first period where the experiment reached nominal operating conditions and recorded over 9 fb⁻¹ of integrated luminosity.

Secondary track

T11 - Detectors

Authors:CAVALLERO, Giovanni (INFN Ferrara);COLLABORATION, LHCbPresenter:CAVALLERO, Giovanni (INFN Ferrara)Session Classification:T12

Track Classification: T12 - Data Handling and Computing