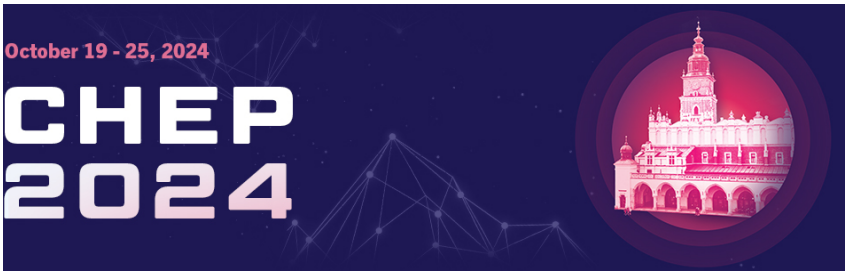

Contribution ID: **66** Contribution code: **MON 36** Type: **Poster**

Tracking efficiency studies for LHCb in Run 3

Monday 21 October 2024 16:00 (15 minutes)

The LHCb detector, a multi-purpose detector with a main focus on the study of hadrons containing b- and c-quarks, has been upgraded to enable precision measurements at an instantaneous luminosity of $2\times10^{33}cm^{-2}s^{-1}$ at $\sqrt{s} = 14$ TeV, five times higher than the previous detector capacity. With the almost completely new detector, a software-only trigger system has been developed and all track reconstruction algorithms have been redesigned.
The knowledge of the track reconstruction efficiency at different momenta and regions of the detector is essential for many analyses including cross-section and asymmetry measurements. A tag-and-probe method is developed to estimate the tracking efficiency using muonic tracks from $J/\psi \to \mu^+\mu^-$ decays, where the probe tracks are reconstructed excluding hits from the tracking subdetectors under scrutinity.
A complementary method is exploited to address tracking efficiency corrections due to the hadronic interactions with the detector material using pions from $D^0 \to K\pi$ and $D^0 \to K\pi\pi\pi$ decays. In this talk, these data-driven methods and their applications to the data taken in 2023 and 2024 are presented.

Primary authors: LI, Peilian (CERN); CASPARY, Rowina (Heidelberg University (DE))

Presenter: CASPARY, Rowina (Heidelberg University (DE))

Session Classification: Poster session

Track Classification: Track 3 - Offline Computing