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The LHCb RICH detectors: operations and performance

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During the second LHC long shutdown (2019 – 2021), the LHCb experiment underwent a major upgrade in order to be able to operate at the instantaneous luminosity of $2 \times 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$, and remove the hardware trigger reading out every LHC bunch crossing. This instantaneous luminosity corresponds to illumination rates up to 100 MHz/cm^2 on the photon detection plane of the RICH system. In order to provide charged hadron identification in a wide range of momentum between approximately 3 and 100 GeV/c in a such challenging environment, the RICH detectors of LHCb has been completely refurbished and are operated at the LHC since 2022. The overview of operations, including the calibration procedures of the photon detection chain, is presented, together with the figures of merit used to assess the performance of the upgraded RICH detectors.

Author: CAVALLERO, Giovanni (INFN Ferrara)

Presenter: CAVALLERO, Giovanni (INFN Ferrara)

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