

The upgrade of the LHCb RICH detector

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The two LHCb RICH detectors have provided excellent particle ID until the end of Run2 in 2018 operating at the luminosity of $\sim 4 \times 10^{32} \text{ cm}^{-2}\text{s}^{-1}$. From the beginning of Run3 in 2022, the Level 0 hardware trigger of the experiment will be removed to allow data readout at the full LHC collision rate of 40 MHz and the luminosity will be increased to $\sim 2 \times 10^{33} \text{ cm}^{-2}\text{s}^{-1}$. In order to adapt the RICH system to the new rate, the current HPD detectors with embedded electronics limited to readout event rate of 1 MHz have been replaced by MaPMTs with external readout electronics. Moreover, in order to reduce the occupancy of the photon detectors due to the higher luminosity, a reoptimization of the optics is required. In this talk the upgraded opto-electronics chain and the performance expected for Run3 will be presented together with the automated quality control procedures to qualify the RICH photon detectors and support electronics.

TIPP2020 abstract resubmission?

Yes, this would have been presented at TIPP2020.

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