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Commissioning of the upgraded RICH system at the LHCb experiment

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The Ring-Imaging Cherenkov (RICH) system is an essential element of the LHCb experiment: it consists of an upstream detector (RICH1), located close to the interaction point, and a downstream detector (RICH2), placed after the tracking system, and has the task of identifying charged hadrons over the momentum range 2-100 GeV/c.

Currently the LHCb experiment is completing an upgrade phase to allow data collection at a five-fold increase in instantaneous luminosity up to $2 \cdot 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$ and read out data at a rate of 40 MHz. The challenges of the higher luminosity are: a significant increase of the detector occupancy and a larger radiation dose. In order to match the new experimental requirements, both RICH detectors have been upgraded with a redesigned opto-electronic chain and new photon detectors. In addition RICH1 has a modified layout with new mechanics and spherical mirrors in order to reduce the maximum occupancy. A summary on the upgrade programme and the current status of the commissioning operations will be presented.

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