

Upgrade II of the LHCb RICH detectors for the high-luminosity LHC

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The hadron particle identification provided by the RICH system in LHCb over a momentum range of 2.6 –100 GeV/c has been a key element of the success of the experiment and will remain equally important for Upgrade II. A substantial improvement in the precision of the measurements of the space and time coordinates of the photons detected in the RICH detectors is needed to keep the excellent performance at instantaneous luminosities up to 7.5 times those expected for Upgrade I and 75 times those released in the past. It will require a readout strategy with high-resolution timing information and significant improvements in the resolution of the reconstructed Cherenkov angle, new optical schemes and very light-weight components. The reconstruction software will also need a major upgrade to benefit from these improvements. The key elements towards the realisation of this programme will be discussed, with an overview of the R&D, simulation results and performance studies.

Alternate track

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Yes

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