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The Ring Imaging CHerenkov detectors of the LHCb experiment

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Particle identification is the
fundamental requirement of the LHCb experiment to fulfill its physics programme. Positive hadron identification
is performed by two Ring Imaging CHerenkov (RICH) detectors. This system covers
the full angular acceptance of the experiment and is equipped with three
Cherenkov radiators to identify particles in the wide momentum range from
1 GeV/c up to 100 GeV/c. The Hybrid Photon Detectors (HPDs) located
outside the detector acceptance provide the photon detection with 500,000
channels. Specific readout electronics have been developed to readout and
processing data from the HPDs including data transmission and power
distribution. A dedicated very high voltage control system has been implemented
to operate and monitor the photon detectors. The operation and
performance of the RICH system are ensured by the constant control and
monitoring of low voltage and high voltage systems, of the gas
quality and enviromental parameters, of the mirror alignment, and finally
detector safety. The description of the LHCb RICH will be given.
The experience to operate the detector at the Large Hadron Collider
will be presented and discussed.

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