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LHCb beam monitoring and safety systems

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In Run 3 the LHCb experiment operates at an instantaneous luminosity a factor five higher compared to the previous runs, with sensitive parts of the upgraded detector as close as 5 mm to the beam. Hence, radiation and background levels should be carefully monitored to protect the experiment from effects ranging from poor data quality to instantaneous damage. To this end, LHCb is equipped with a Radiation Monitoring System (RMS) and a Beam Conditions Monitor (BCM). The RMS is a system of metal foil detectors dedicated to the monitoring of the radiation load and background stability, while the BCM continuously provides the beam permit to the LHC depending on the rate of losses measured every 40 us by two stations of polycrystalline diamond sensors at either side of the interaction point. In this talk, the hardware and software developments of BCM and RMS in preparation for Run 3 of data taking, as well as the performance from the first weeks of operation in the new environment are presented.

In-person participation

Yes

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Session Classification: Operation, Performance and Upgrade (Incl. HL-LHC) of Present Detectors

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