

Fast Beam Conditions Monitor for CMS: performance and upgrade

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The CMS beam and radiation monitoring subsystem BCM1F (Fast Beam Conditions Monitor) consists of 8 individual diamond sensors situated around the beam pipe within the pixel detector volume, for the purpose of fast bunch-by-bunch monitoring of beam background and collision products. In addition, effort is ongoing to use BCM1F as an online luminosity monitor. BCM1F will be running whenever there is beam in LHC, and its data acquisition is independent from the data acquisition of the CMS detector, hence it delivers luminosity even when CMS is not taking data. A report will be given on the performance of BCM1F during LHC run I, including results of the van der Meer scan and on-line luminosity monitoring done in 2012. In order to match the requirements due to higher luminosity and 25 ns bunch spacing, several changes to the system must be implemented during the upcoming shutdown, including upgraded electronics and precise gain monitoring. First results from Run II preparation will be shown.

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