
Contribution ID: **459** Type: **Experimental poster**

# Precision Luminosity Measurement with the CMS detector at HL-LHC

*Thursday, June 10, 2021 6:45 PM (1 hour)*

The high-luminosity upgrade of the LHC (HL-LHC) is foreseen to reach an instantaneous luminosity a factor of five to seven times the nominal LHC design value. The resulting, unprecedented requirements for background monitoring and luminosity measurement create the need for new high-precision instrumentation at CMS, using radiation-hard detector technologies. This contribution presents the strategy for bunch-by-bunch online luminosity measurement based on various detector technologies. A main component of the system is the Tracker Endcap Pixel Detector with dedicated triggers for online measurement of luminosity and beam-induced background using pixel cluster counting on an FPGA. The potential of the exploitation of the outer tracker, the hadron forward calorimeter and muon trigger objects is also discussed, as well as the concept of a standalone luminosity and beam-induced background monitor using Si-pad sensors.

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**Session Classification:** Poster Session

**Track Classification:** Performance