

The HL-LHC Upgrade of the ATLAS Tile Hadronic Calorimeter

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The High-Luminosity phase of LHC, delivering five times the LHC nominal instantaneous luminosity, is scheduled to begin in late 2027. The ATLAS Tile Hadronic Calorimeter (TileCal) will need new electronics to meet the requirements of a 1 MHz trigger, higher radiation dose, and to ensure sound performance under high pile-up conditions. Both the on- and off-detector TileCal electronics will be replaced during the shutdown of 2025-2027. PMT signals from every TileCal cell will be digitized and sent directly to the back-end electronics, where the signals are reconstructed, stored, and sent to the first level of trigger at a rate of 40 MHz. This will provide better precision of the calorimeter signals used by the trigger system and will allow the development of more complex trigger algorithms. The TileCal upgrade program has undergone extensive R&D and beam tests. A miniature “demonstrator” module has been tested in actual detector conditions. We will present the results of these studies.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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