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ATLAS Tile Calorimeter Electronics and Future Upgrade

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The Tile Calorimeter (TileCal) of the ATLAS experiment is the hadronic calorimeter designed for energy reconstruction of hadrons, jets, tau-particles and missing transverse energy. An overview of the on-detector and off-detector TileCal electronics used for ATLAS data taking is given. Upgrade plans for TileCal electronics for the High Luminosity LHC programme in 2024 are discussed, together with R&D activities at different laboratories that target different parts of the TileCal electronics. In particular, a demonstrator prototype for TileCal electronics to be installed during the long shutdown in 2014 is described.

Summary

An overview talk on behalf of the ATLAS Tile Calorimeter group (ATLAS collaboration).

The Tile Calorimeter (TileCal) of the ATLAS experiment is the hadronic calorimeter designed for energy reconstruction of hadrons, jets, tau-particles and missing transverse energy. An overview of the on-detector and off-detector TileCal electronics used for ATLAS data taking is given. Upgrade plans for TileCal electronics for the High Luminosity LHC programme in 2024 are discussed, together with R&D activities at different laboratories that target different parts of the TileCal electronics.

During the upgrade the majority of the on- and off-detector electronics will be replaced and all TileCal signals will be digitized and sent to the off-detector electronics. The digitized data will be sent to the counting room using a 10 Gbps optical link, while 5 Gbps down-links are used for synchronization, configuration and detector control. There are three different options that are presently being investigated for the front-end electronic upgrade. This talk will discuss such options. In particular, a demonstrator prototype for TileCal electronics to be installed during the long shutdown in 2014 is described.

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