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Upgrade plans for the ATLAS Calorimeters

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The ATLAS calorimeter is composed by detectors based on different techniques to exploit the best performance while maintaining a sufficient radiation resistance in each geometrical region. Radiation resistant liquid argon (LAr) sampling calorimeters are used for all electromagnetic sections, for the endcap (HEC) and forward (FCal) hadronic sections. The most central hadronic section is instead, a steel-scintillator sampling calorimeter. While LHC data-taking is expected to continue for a number of years, plans are already being developed for operation of the LHC and the detectors at an increased instantaneous luminosity about 5 times the original design value. There are plans for a two-phase detector upgrade. For phase-1, the LAr calorimeter trigger will be upgraded with new digital tower builder boards being designed to receive higher granularity signals, digitize them on the detector and send them via fast optical links to a new digital processing system. For phase-2 TileCal upgrade consists in replacing the on- and off-detector electronics so that all calorimeter signals are directly digitized and sent to the off-detector electronics in the counting room. Phase-2 upgrades being considered for the LAr system include changes to the DAQ, the HEC cold electronics and the FCal. Development work for these options includes high rate tests of small test modules of the endcap and forward detectors. Proposed solutions for LAr operations in phase-2 will be discussed.

for the collaboration

ATLAS Liquid Argon Calorimeter Group

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