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ATLAS LAr Calorimeter Performance in LHC Run-2

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The ATLAS detector was designed and built to study proton-proton collisions produced at the LHC at centre-of-mass energies up to 14 TeV and instantaneous luminosities up to 1034 cm−2 s−1. Liquid argon (LAr) sampling calorimeters are employed for all electromagnetic calorimetry in the pseudo-rapidity region $|\eta| < 3.2$, and for hadronic calorimetry in the region from $|\eta| = 1.5$ to $|\eta| = 4.9$. In the first LHC run a total luminosity of 27 fb−1 has been collected at center-of-mass energies of 7-8 TeV between year of 2010 to 2012. Following a period of detector consolidation during a long shutdown, Run-2 started with approximately 3.9 fb-1 and 35.6 fb-1 of data at a center-of-mass energy of 13 TeV recorded in 2015 and 2016, respectively. In order to realize the level-1 acceptance rate of 100 kHz in Run-2 data taking, number of read-out samples for the energy and the time measurement has been modified from five to four with keeping the expected performance. The well calibrated and highly granular Liquid Argon Calorimeter achieved its design values both in energy measurement as well as in direction resolution, which was a main ingredient for the successful discovery of a Higgs boson in the di-photon decay channel. This contribution will give an overview of the detector operation, hardware improvements, changes in the monitoring and data quality procedures, to cope with increased pileup, as well as the achieved performance, including the calibration and stability of the electromagnetic scale, noise level, response uniformity and time resolution.

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