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The ATLAS ALFA detector upgrade

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The operation experience with ATLAS ALFA detectors in the LHC environment during the Run1 period has shown significant beam-induced heating. Subsequent comprehensive studies revealed that heating effects could be disastrous in the case of the larger beam intensities foreseen for higher luminosities in the LHC Run2. During the first LHC long shutdown (LS1) all ALFA detectors have been removed from the LHC tunnel and their covers - Roman Pots - underwent a geometry upgrade to minimize the impedance losses. It will be shown that this modification together with a system improving the internal heat transfer and an air cooling system, significantly shifted the temperatures of ALFA detectors away from the critical limits throughout the LHC Run2. Also ALFA trigger system was considerably upgraded to keep measured data safely inside the Run2 ATLAS latency budget and to minimize dead time. The needed hardware changes of the trigger system will be presented in the second part of the talk.

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