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The migration of the ATLAS electron photon trigger software to the AthenaMT

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As we are moving towards LHC Run 3, the data acquisition in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector will be performed in a multi-threaded environment of the Athena framework (AthenaMT). This will allow the concurrent processing of High Level Trigger (HLT) algorithms on single and multiple events. For trigger electron/photon reconstruction, the Run 2 legacy system had two main stages: “Fast” (reconstruction + rejection) and “Precision” (reconstruction + rejection). The Fast step used trigger-specific algorithms and was followed by the Precision step. The reconstruction in the Run 2 Precision step used “offline”-like methods keeping them trigger compatible. However, full implementation of the offline algorithm would lead to a more efficient reconstruction of the final objects (e.g. electrons and photons) at the HLT. The previous incompatibility of offline algorithms in the trigger environment has been addressed in the AthenaMT. A common data-algorithm interface has been introduced for both the trigger and the offline environments. The optimization of CPU usage is being done by allowing data dependency and simultaneous running of different algorithms. This talk will present the efforts being made to use electron/photon offline reconstruction algorithms intact in the trigger environment at the AthenaMT with results, future plans and issues came along with it.

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