

The ATLAS Monte Carlo detector simulation for Run 3 at the LHC

Saturday 20 July 2024 10:45 (17 minutes)

In preparation for Run 3 at the LHC, the MC Simulation performed with Geant4 within ATLAS has undergone significant improvements to enhance its computational performance and overall efficiency. This talk offers a comprehensive overview of the optimizations implemented in the ATLAS simulation for Run 3. Notable developments include the application of EM range cuts, the implementation of Neutron and Photon Russian roulette and the development of the Woodcock tracking in the EM Endcap Calorimeter, the tuning of simulation parameters, smarter and more efficient geometry descriptions, the implementation of new Geant4 core features and improvements that target the way Geant4 is linked and used within the framework. These enhancements collectively resulted in a speedup in CPU time of a factor of 2 compared to the baseline configuration used in Run 2. In addition, this contribution provides an overview of forthcoming optimizations, emphasizing both immediate and longer-term enhancements.

Alternate track

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Yes

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