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AtlFast3: Next Generation of Fast Simulation in ATLAS

Friday, 21 May 2021 09:00 (30 minutes)

ATLAS is one of the largest experiments at the Large Hadron Collider. Its broad physics program ranges from precision measurements to the discovery of new interactions, requiring gargantuan amount of simulated Monte Carlo events. However, a detailed detector simulation with Geant4 is often too slow and requires too many CPU resources. For more than 10 years, ATLAS has developed and utilized tools that replace the slowest component - the calorimeter shower simulation - by faster alternatives. AtlFast3 is the next generation of high precision fast simulation in ATLAS. AtlFast3 is a combination of a parametrization-based Fast Calorimeter Simulation and a new machine learning-based Fast Calorimeter Simulation, and is deployed to meet the computing challenges and Monte Carlo needs now and in the future of ATLAS. With unprecedented precision and the ability to model jet sub-structure, AtlFast3 can be used for the simulation of almost any physics processes.

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