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AtlFast3: the next generation of fast simulation in ATLAS

Friday, 8 July 2022 09:00 (15 minutes)

AtlFast3 is the next generation of high precision fast simulation in ATLAS that is being deployed by the collaboration and will replace AtlFastII, the fast simulation tool that was successfully used until now. Atl-Fast3 combines a parametrization-based Fast Calorimeter Simulation and a new machine-learning based Fast Calorimeter Simulation based on Generative Adversarial Networks (GANs). The new fast simulation improves the accuracy of simulating objects used in analyses when compared to Geant4, with a focus on those that were poorly modelled in AtlFastII. In particular, the simulation of jets of particles reconstructed with large radii and the detailed description of their substructure, are significantly improved in Atlfast3. Additionally the agreement between AtlFast3 and Geant4 is improved for high momentum τ-leptons. The modelling and performance are evaluated on events produced at 13 TeV centre-of-mass energy in the Run-2 data-taking conditions.

In-person participation

Yes

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