

Fast Calorimeter Simulation in ATLAS: FastCaloSimV2

Wednesday 15 January 2020 16:45 (20 minutes)

The ATLAS physics program relies on very large samples of GEANT4 simulated events, which provide a highly detailed and accurate simulation of the ATLAS detector. But this accuracy comes with a high price in CPU, predominantly caused by the calorimeter simulation. The sensitivity of many physics analyses is already limited by the available Monte Carlo statistics and will be even more so in the future. Therefore, sophisticated fast simulation tools are developed. The calorimeter shower simulation of most samples in Run-3 will be based on a new parametrized description of longitudinal and lateral energy deposits (FastCaloSimV2). FastCaloSimV2 includes machine learning approaches to achieve a fast and accurate description, and to ensure its applicability to a broad variety of physics cases. In this talk, we will describe this new tool, focussing on the modelling of hadronic showers, and demonstrate its potential for physics applications.

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Session Classification: Generative Models