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Investigating the use of fast detector simulation for jet flavor identification algorithms in ATLAS — Diptaparna Biswas, Carolina Costa, Markus Cristinziani, Carmen Diez Pardos, Ivor Fleck, Gabriel Gomes, Jan Joachim Hahn, Nikolaos Kamaras, Vadim Kostyukhin, Nils Benedikt Krengel, •Austin Olson, Inês Pinto, Sebastian Rentschler, Elisabeth Schopf, Katharina Voss, Wolfgang Walkowiak, and Adam Warnerbring — Experimentelle Teilchenphysik, Center for Particle Physics Siegen, Universität Siegen

In the ATLAS experiment, identification of quark flavor in a given jet has recently been done with machine learning algorithms known as "taggers", trained with simulated events. Taggers' performance depends on accurate simulation of jet constituents. Previously, only tracks associated to jets were used in training, but the latest tagger, GN3, also uses all particle flow constituents. At the same time, approximation of calorimeter showers with generative modeling (FastSim) is becoming more adopted by the ATLAS collaboration in lieu of full Geant4 simulation (FullSim).

Many rare signal samples and several background samples are produced using FastSim, making it essential to evaluate the performance of this new GN3 model. Recent studies indicate significant scope for improving the performance of a GN3-like model solely by increasing training statistics, making FastSim samples a desirable option for model training itself. This talk presents comparisons of FastSim and FullSim samples in the context of ATLAS taggers.

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