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The Fast Simulation Program of ATLAS at the LHC

Saturday 20 July 2024 11:19 (17 minutes)

The simulation of MC events is a crucial task and an indispensable ingredient for every physics analysis. To reduce the CPU needs of the GEANT simulation, ATLAS has developed a strong program to replace parts of the simulation chain by fast simulation tools. Among those tools is AtlFast3, which utilizes a combination of Generative Adversarial Networks and sophisticated parametrizations for the fast simulation of showers in the EM and hadronic calorimeters. FATRAS is a tool that approximates particle interactions with the material through physics formalisms. An integration of FATRAS with the experiment-independent common tracking software (ACTS) is also in development. Track overlay is a technique to speed up the production of MC samples with additional interactions. Machine learning techniques are used to ensure this method can even be applied in dense tracking environments. This talk will discuss the status of the development of these tools as well as their performance.

Alternate track

I read the instructions above

Yes

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