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Generative Adversarial Networks for LHCb Fast Simulation

Monday, 4 November 2019 15:00 (15 minutes)

LHCb is one of the major experiments operating at the Large Hadron Collider at CERN. The richness of the physics program and the increasing precision of the measurements in LHCb lead to the need of ever larger simulated samples. This need will increase further when the upgraded LHCb detector will start collecting data in the LHC Run 3. Given the computing resources pledged for the production of Monte Carlo simulated events in the next years, the use of fast simulation techniques will be mandatory to cope with the expected dataset size. In LHCb generative models, which are nowadays widely used for computer vision and image processing are being investigated in order to accelerate the generation of showers in the calorimeter and high-level responses of Cherenkov detector. We demonstrate that this approach provides high-fidelity results along with a significant speed increase and discuss possible implication of these results. We also present an implementation of this algorithm into LHCb simulation software and validation tests.

Consider for promotion

Yes

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