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Generative Adversarial Network for Background Generation in the KLM subsystem at Belle II

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The second-generation Belle II experiment at the SuperKEKB colliding-beam accelerator in Japan searches for new-physics signatures and studies the behaviour of heavy quarks and leptons produced in electron-positron collisions. The KLM (K-long and Muon) subsystem of Belle II identifies long-lived neutral kaons via hadronic-shower byproducts and muons via their undeflected penetration through dense matter. GEANT4-based Monte Carlo simulations of physics processes in Belle II are supplemented by the overlay of additional hits on each event, sampled from a curated library of background events. We describe the proposed use of a generative adversarial network to construct dynamically these background overlay hits in the KLM and compare the GAN's performance relative to curated-library approach.

Consider for promotion

No

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