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Reweighting Leading-Order Events to Next-to-Leading Order Accuracy in MC@NLO Simulations

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Monte Carlo simulations at next-to-leading order (NLO) precision are crucial for accurate predictions in high-energy physics, yet they remain computationally expensive due to intensive phase-space integration and event unweighting. This project explores an alternative strategy: generating events at leading order (LO) accuracy and reweighting them to NLO precision. The method is evaluated in the context of MC@NLO and MC@NLO- Δ frameworks, focusing on the generation of S-events that retain the same kinematics as the original LO events. This approach aims to reduce computational demands while preserving the theoretical rigor of NLO calculations, offering potential improvements for future large-scale event generation campaigns.

Abstract Category

Particle Physics

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