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Resummation Scales in Collinear and Sudakov Processes at Hadron Colliders

Monday 21 August 2023 18:40 (15 minutes)

QCD calculations for collider physics make use of perturbative solutions of renormalisation group equations (RGEs). RGE solutions can contribute significantly to systematic uncertainties of theoretical predictions for physical observables. We propose a method to express these systematic effects in terms of resummation scales, using techniques borrowed from soft-gluon resummation approaches. We discuss applications to collinear and Sudakov processes at hadron colliders, including deep-inelastic scattering (DIS) structure functions and the Drell-Yan (DY) vector-boson transverse momentum distribution.

The talk is based on work in progress in collaboration with V. Bertone and G. Bozzi and on work published in Phys. Rev. D 105 (2022) 096003 “Perturbative hysteresis and emergent resummation scales”.

Collaboration / Activity

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