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Particle Physics Seminars at IJCLab

Jeudi 25 Avril 2024, 14 :00
IJCLAB, 100/2-A201 - Salle A201 (IJCLab)
Domaines : hep-ph—hep-th

Titre : *Formal and practical accuracy in Parton Showers*

Orateur : **Silvia Ferrario Ravasio (CERN)**

Résumé : *Parton shower event generators are fundamental tools for establishing the quantitative connection between theory and experiment. However, their flexibility comes at the expense of lower formal accuracy compared to state-of-the-art analytic calculations, which, in turn, have more limited applicability. The poor accuracy of commonly used parton shower generators introduce systematic uncertainties that impact all measurements in collider experiments. In this talk, I will discuss the efforts made by the PanScales collaboration to augment the formal accuracy of parton showers. Until recently, this accuracy was limited to the leading logarithms. Specifically, I will demonstrate how we can achieve Next-to-Leading Logarithm (NLL) accuracy for processes involving two partons, such as color-singlet production, decay, and deep inelastic scattering. Furthermore, I will present advancements beyond NLL for observables primarily sensitive to soft emissions, such as particle multiplicity and jet vetoes. These developments are crucial for refining our understanding of fundamental particle interactions. They also play a vital role in reducing uncertainties in present and future collider measurements.*