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E I N L A D U N G

im Rahmen des Teilchenphysikseminars

zum Vortrag von

Johannes MICHEL

(University of Amsterdam)

über

"QCD Factorization and Resummation from Heavy Jets to Heavy Hadrons"

Abstract:

Existing data from LEP, B factories, and the LHC, as well as the experimental programs at the upcoming EIC and other future colliders, contain the key to a new level of depth in our understanding of QCD. These advances can range from precision determinations of the strong coupling -- the main parameter of QCD -- to new ways of probing the still-mysterious physics of hadronization, but require equally precise and refined first-principle QCD predictions. In the first part of my talk, I will discuss the all-order resummation of perturbative logarithms near so-called Sudakov shoulders, specifically for the case of the heavy jet mass (HJM) event shape in electron-positron collisions. I present a unified formalism that describes the partonic HJM distribution from the dijet to the shoulder region, and discuss in particular how we cleared a roadblock on the way to higher perturbative precision by adapting techniques from transverse momentum-dependent (TMD) resummation. In the second part of my talk I turn to the physics of TMD fragmentation functions (FFs) for heavy quarks, which we recently proposed as a unique new probe of hadronization.
I show highlights of our results, including the phenomenology of these functions at colliders, their factorization in boosted Heavy-Quark Effective Theory, and complete one-loop results featuring a rich singularity and renormalization structure.

Zeit: Dienstag, 4.6.2024, 16:15h
Ort: Erwin-Schrödinger-Hörsaal, Boltzmanngasse 5, 5. Stock

Zoom Meeting:
Meeting ID: 933 4269 3866   Passcode: 185096
https://univienna.zoom.us/j/93342693866?pwd=aUpTR0VJNUhJY2Q0ajdaKzI1YWVBQT09

gez.: A. Hoang, M. Procura