

Towards Quarkonium Fragmentation from Heavy-Flavor Non-Relativistic Evolution

Tuesday, 30 July 2024 15:00 (20 minutes)

We report progress on the Heavy-Flavor Non-Relativistic Evolution (HF-NRevo) setup, a novel methodology to address the quarkonium formation within the fragmentation approximation. Our analysis addresses the moderate to large transverse-momentum regime, where the production mechanism based on the leading-twist collinear fragmentation from a single parton is expected to prevail over the higher-twist emission, directly from the hard-scattering subprocess, of the constituent heavy-quark pair. We rely upon Non-Relativistic-QCD (NRQCD) next-to-leading calculations for all the parton fragmentation channels to vector (J/ψ and Υ) and pseudoscalar (η_c and η_b) quarkonia, which we take as proxies for initial-scale inputs. Thus, a complete set of variable-flavor number-scheme fragmentation functions, named NRFF1.0, are built through standard DGLAP evolution. Statistical errors are assessed via a Monte Carlo, replica-like approach that also accounts for Missing Higher-Order Uncertainties (MHOU). The link between the NRFF1.0 approach and the MCscales one will be discussed. As a prospect, the use of HF-NRevo to address the quarkonium-in-jet fragmentation will be highlighted.

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