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Lattice QCD applications of optimised meson operators in the distillation framework

Tuesday, October 29, 2024 3:00 PM (30 minutes)

It has been demonstrated that distillation profiles can be employed to build optimised quarkonium interpolators for spectroscopy calculations in lattice QCD. The use of optimal profiles increases the overlap with the ground state significantly and grants access to excited states, for multiple quantum numbers. After reviewing the method, we report exemplary results on the low-lying charmonium spectrum from lattice QCD simulations with dynamical quarks, test the usefulness of profiles in distillation space for heavy-light systems and sketch the handling of momenta in this framework. As further applications, recent and ongoing studies of static-light meson spectroscopy as well as the system of light mesons, charmonium and glueballs in the flavour singlet channels, where they can mix, are also discussed.

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