

Gradient Flow Renormalisation for Meson Mixing and Lifetimes

Wednesday 12 February 2025 14:00 (30 minutes)

Fermionic gradient flow in combination with the short flow time expansion provides a renormalisation scheme where hadronic matrix elements on the lattice are evolved along the flow time gradually removing UV divergences.

In this renormalisation scheme certain challenges such as mixing with operators of lower mass dimension are suppressed or shifted to the perturbative part of the procedure, matching e.g. to the $\overline{\text{MS}}$ scheme.

We demonstrate our gradient flow renormalisation procedure determining matrix elements of four-quark operators describing neutral meson mixing or meson lifetimes.

While meson mixing calculations are well-established on the lattice and serve to validate our procedure, a lattice calculation of matrix elements for heavy meson lifetimes is still outstanding.

Preliminary results for mesons formed of a charm and strange quark are presented and prospects towards determinations for B mesons are given.

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Session Classification: Session 3