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Discretization effects of gradient flows in QCD-like theories on the lattice

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Recent software advances now allow large-scale lattice studies of the Corrigan–Ramond large- N_c limit of Yang–Mills theory coupled with a two-index antisymmetric fermion, providing a path to SUSY Yang–Mills. We are currently generating ensembles for $N_c = 4, 5, 6$ for lattice spacings in the range $0.1 - 0.08$ fm, enabling a careful study of cutoff effects and lattice topological properties to properly monitor freezing. In particular, in this talk, we explore the topological properties of such gauge configurations, where fractional charges might naively be expected. Using a gluonic definition of the topological charge combined with gradient flow, we perform an analysis of the effect of different discretisations of the kernel action, from which we identify and interpret quantitative differences between Wilson and over-improved flows (such as DBW2), showing how these are mitigated in the continuum limit.

Parallel Session (for talks only)

Theoretical developments and applications beyond Standard Model

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