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Estimates of scaling violations for pure SU(2) lattice gauge theory

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Content

We investigate the approach of pure SU(2) lattice gauge theory with the Wilson action to its continuum limit using the deconfining transition, the gradient flow, and the cooling flow to set the scale. Of those, the cooling flow turns out to be computationally most efficient. We explore systematic errors due to use of three different energy observables and two distinct reference values for the flow time, the latter obtained by matching initial scaling behavior of some energy observables to that of the deconfining transition. Another important source of systematic errors are distinct fitting forms for the approach to the continuum limit. Besides relying in the conventional way on ratios of masses, we elaborate on a form originally introduced by Allton, which incorporates asymptotic scaling behavior. Though still small, systematic errors can be considerably larger than statistical errors.

Preferred track (if multiple tracks have been selected)

Theoretical Developments

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