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## Topological summation in lattice gauge theory

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### Abstract content

In gauge theories the field configurations often occur in distinct topological sectors. In a lattice regularized system with chiral fermions, these sectors can be defined by adapting the Atiyah-Singer Index Theorem. If such a model is simulated with local updates of the lattice gauge configuration, the Monte Carlo history tends to get stuck in one sector for many step, in particular on fine lattices. Thus expectation values can be measured only within a few specific sectors. Here we present a pilot study in the two-flavor Schwinger model which explores methods of approximating the complete result for an observable, which corresponds to a suitable sum over all sectors, based on numerical measurements at a few specific topological charges. We also probe various procedures for an indirect evaluation of the topological susceptibility starting from such topologically restricted measurements.

### Summary

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