

Abstract Submitted
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Unphysical phases in staggered chiral perturbation theory

GEORGE DAVILA, University of Central Florida — Lattice QCD is the field of study in which spacetime is discretized onto a lattice of dimension a in order to obtain theoretical and numerical results. Staggered chiral perturbation theory is a method of placing fermions on a spacetime lattice. We examine various phases of this theory for staggered quarks. In beyond-the-standard-model simulations using a large number (>8) of staggered fermions, unphysical phases appear for coarse enough lattice spacing. At least one of these phases can be explained in the context of staggered chiral perturbation theory. For lattice spacings in the regime $a^2 \ll (\Lambda_{\text{QCD}})^{-2}$, we show that only three broken phases for staggered fermions exist.

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