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Lattice study of finite volume effects on transport properties of chiral fermions

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We numerically study finite volume effects on transport properties of chiral fermions. To this end, we compute anomalous transport coefficients in linear response approximation, both in continuum and on the lattice using Wilson-Dirac and Overlap fermions. We analyze stability of plasma of chiral (lattice) fermions coupled to dynamical gauge fields and find that finite volume effects significantly impact lattice simulations of dynamical decay of chiral charge due to Chiral Magnetic Instability. We confront our results to real-time lattice simulation in the framework of classical-statistical field theory.

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