

UM Physics Department

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Title: Chiral Lattice Fermions from Staggered Fields

Abstract:

We construct lattice theories from reduced staggered fermions in four dimensions that we argue are capable of producing chiral theories in the continuum limit. The construction employs Yukawa interactions of Fidkowski-Kitaev type which depend on the lattice site parity. We propose that such interactions are capable of generating cut-off scale masses for half of the lattice fermions while preserving all symmetries. We argue that the remaining lattice fermions organize themselves in the continuum limit into a set of sixteen massless Majorana or equivalently Weyl fermions. We show in the context of the lattice model how this fermion content is needed to cancel off a discrete anomaly arising in the continuum limit.