

## An Effectively Chiral Yukawa Model on a Lattice

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Abstract: A lattice Yukawa model with naive fermions is presented which, near a weak-coupling phase transition, can have small masses for the 8 doublers of one axial charge while rendering those of opposite charge much heavier than  $\langle \phi \rangle_R$ . The action is ultra-local and obeys all fundamental principles including exact gauge invariance when gauge fields are included. Analytical calculations have been done for models invariant under both  $U(1)_R \times U(1)_L$  and  $SU(2)_R \times SU(2)_L$  global groups. The same analysis reproduces fairly accurately the old simulation results in the Smit-Swift model where the mass of the lightest unwanted doubler remains below  $\langle \phi \rangle_R$  near the weak-coupling transition. The methodology for naive fermions can be carried over to staggered fermions where a realistic fermion spectrum and a lattice version of the Standard Model might be achieved.