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Nuclear Parity Violation from 4-quark Interactions

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We investigate the parity odd $\Delta I = 1$ pion-nucleon coupling h_{π}^1 from lattice QCD. With the PCAC-based use of a parity-conserving effective Hamiltonian, we extract the coupling by determining the nucleon mass splitting arising from effective 4-quark interactions using the Feynman-Hellmann theorem. We present preliminary results of the mass shift for a $32^3 \times 64$ ensemble of $N_f = 2 + 1 + 1$ twisted mass fermions at pion mass 260 MeV and lattice spacing a = 0.097 fm.

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