

# Parity-violating pion-nucleon coupling from Lattice QCD

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I report on a pilot lattice simulation to study hadronic parity violation with lattice QCD, in particular to calculate the  $P$ -odd long-range pion-nucleon coupling  $h_\pi^1$ . I discuss the implementation of a recently proposed new approach, where the parity-violating Lagrangian is mapped to a  $P$ -conserving one, based on the PCAC relation, and the coupling  $h_\pi^1$  is extracted from nucleon matrix elements of  $P$ -conserving 4-quark operators. Barring renormalization and fermion loop diagrams, we estimate  $h_\pi^1 = 2.31 (32) 10^{-7}$  at 260 MeV pion mass, already in fairly good agreement with the recent experimental determination by the NPDGamma collaboration.

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