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Title

<u>Parity Violation in Neutron Deuteron Scattering in Pionless Effective Field Theory</u>

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Abstract

In this dissertation the parity violating neutron deuteron scattering amplitudes are calculated using pionless effective field theory to leading order. The five low energy parity violating constants present in pionless effective field theory are estimated by matching onto the "best" values for the parameters of the model by Desplanques, Donoghue, and Holstein (DDH). Using these estimates and the calculated amplitudes, predictions for the spin rotation of a neutron through a deuteron target are given with a value of 1.8×10^{-8} rad cm-1. Also given are the longitudinal analyzing power in neutron deuteron scattering with a polarized neutron yielding 2.2×10^{-8}, and a polarized deuteron giving 4.0×10^{-8}. These observables are discussed in the broader context of hadronic parity violation and as possible future experiments to determine the values of the five low energy parity violating constant present in pionless effective theory.

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