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The parity-violating asymmetry in the ^{3}He$(\vec{n},p)^3$H reaction MICHELE VIVIANI, INFN, Sezione di Pisa (Italy) — In this contribution, we report for a theoretical study of the longitudinal asymmetry induced by parity-violating (PV) nucleon-nucleon potential in the charge-exchange reaction ^{3}He$(\vec{n},p)^3$H. Such an experiment is in an advanced stage of planning at the Spallation Neutron Source at Oak Ridge National Laboratory. The matrix elements involving PV transitions are obtained in first-order perturbation theory in the hadronic weak-interaction potential, while those connecting states of the same parity are derived from solutions of the strong-interaction Hamiltonian with the hyperspherical-harmonics (HH) method, fully accounting for the coupled-channel nature of the scattering problem. We also present predictions for the n-^{3}He scattering lengths and compare them with the available measured values. The longitudinally asymmetry is finally calculated for vanishing neutron incident energies, in correspondence of two models of PV nucleon-nucleon interaction, the so-called DDH potential, and the one derived in pionless EFT.

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