Abstract Submitted
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Large-Nc constraints on parity-violating low-energy constants in pionless effective field theory[1] SON NGUYEN, Duke University, MATTHIAS SCHINDLER, University of South Carolina , ROXANNE SPRINGER, Duke University, JARED VANASSE, Fitchburg State University — References [1,2] have shown that a combination of pionless effective field theory (EFT) and the large-N_c expansion, which assumes the number of colors N_c to be in large, is a powerful tool for analyzing few-body hadronic parity violation (PV) at low energies. In this talk, we focus on the three-derivative operators in pionless EFT that contribute to six P-D transitions and corrections to five S-P transitions in nucleon-nucleon elastic scattering. We show that the large-N_c expansion can systematically separate low-energy constants (LECs) into those that occur at leading order in N_c and those that occur at next-to-leading order in N_c. We determine that the isoscalar and isotensor terms are dominant in the large-N_c expansion. We also find that only six LECs are independent in this dual pionless EFT and large-N_c expansion, yielding several relationships among the LECs. These constraints are expected to be valid at the 10% level.

[1] D. R. Phillips, D. Samart, and C. Schat, Phys. Rev. Lett. 144, 062301 (2015).
[2] M. R. Schindler, R. P. Springer, and J. Vanasse, Phys. Rev. C 93, 025502 (2016).

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