Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Weak Decays of Halo Nuclei in Effective Field Theory[1] ZICHAO YANG, Department of Physics and Astronomy, University of Tennessee, Knoxville, WAEL ELKAMHAWY, HANS-WERNER HAMMER, Institut fur Kernphysik, Technische Universitat Darmstadt, LUCAS PLATTER, Department of Physics and Astronomy, University of Tennessee, Knoxville — Halo nuclei display a large separation scales, which can be used to treat halo systems using an effective field theory called Halo EFT. We consider the weak decay of valence neutron in one-neutron halo nuclei within this framework for the first time. We calculate the decay strength and the partial decay rate of selected halo nuclei, especially ^{11}Be and ^{31}Ne. We describe thereby the process of beta-delayed proton emission. These systems have been considered previously by Baye and Tursunov, but we use updated experimental input parameters. Furthermore, we discuss the uncertainties resulting from these input parameters but also those arising from the effective field theory approach to this process. We discuss the recoil effect of weak decay and resonance in the final state as well.

[1]This work has been funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation), the National Science Foundation, and the Office of Nuclear Physics, U.S. Department of Energy.

Zichao Yang
Department of Physics, University of Tennessee

Date submitted: 01 Jul 2019 Electronic form version 1.4