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**Universal Correlations in “Pion-less” Effective Field Theory: 3, 4 and 6 Nucleons**<sup>1</sup> HARALD W. GRIESSHAMMER, JOHANNES KIRSCHER, DEEPSHIKHA SHUKLA, Center for Nuclear Studies, George Washington University, HARTMUT M. HOFMANN, University Erlangen-Nuernberg — In a feasibility study for chiral EFT and heavier systems, we analyse bound and scattering properties of 3-, 4- and 6-nucleon systems in the Effective Field Theory “without pions” at next-to-leading order using the Refined Renormalisation Group Method with full Coulomb treatment, with 3N-interactions, phase-equivalent potentials and a range of cut-offs for convergence checks. For correlations between the triton binding energy  $B_{3H}$ , its charge radius and the binding energy of  ${}^4\text{He}$ , convergence is consistent with an expansion parameter  $\approx \frac{1}{3}$ . No 4N-interaction is needed for renormalisation. With the correlation between  $B_{3H}$  and the  ${}^3\text{He}$  binding energy iso-spin symmetric at NLO, the model-independent difference at the physical  $B_{3H}$ ,  $[0.10 \mp 0.03]\text{MeV}$ , is the same both in magnitude and uncertainty as estimates from charge-symmetry breaking. In the first scattering calculation for  $A \geq 4$ , we found a correlation between  $B_{3H}$  and the real part of the singlet scattering length of  ${}^3\text{He}$ -n scattering similar to the Tjon line. Finally, we address convergence of “pion-less” EFT in the halo nucleus  ${}^6\text{He}$ .

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