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Pion-less effective field theory for real and lattice nuclei AAINA BANSAL, SVEN BINDER, Department of Physics and Astronomy, University of Tennessee, Knoxville, TN 37996, USA, ANDREAS EKSTRÖM, Department of Physics, Chalmers University of Technology, SE-412 96 Göteborg, Sweden, GAUTE HAGEN, Physics Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA, THOMAS PAPENBROCK, Department of Physics and Astronomy, University of Tennessee, Knoxville, TN 37996, USA — We compute the medium-heavy nuclei ^{16}O and ^{40}Ca using pion-less effective field theory (EFT) at leading order (LO) and next-to-leading order (NLO). The low-energy coefficients of the EFT Hamiltonian are adjusted to $A = 2, 3$ nuclei data from experiments, or alternatively to data from lattice QCD at unphysical pion mass $m_\pi = 806$ MeV. The EFT is implemented through discrete variable representation of finite harmonic oscillator basis. This approach ensures rapid convergence with respect to the size of the model space and allows us to compute heavier atomic and lattice nuclei. The atomic nuclei ^{16}O and ^{40}Ca are bound with respect to decay into alpha particles at NLO, but not at LO.

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