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Analyzing discretization effects in Nuclear Lattice computations[1]

CHRISTOPHER KOERBER, Ruhr-Universitaet Bochum, Germany University of California, Berkeley — Computations of physical systems must be independent of the basis they are performed in. In the case of Nuclear Lattice computations, this basis generally corresponds to a finite volume on a discrete lattice. However, because of computational costs and the complexity of nuclear forces, results of non-relativistic Nuclear Lattice computations with nucleons as degrees of freedom are frequently evaluated at finite lattice spacings. The topic of this talk is the analysis of finite lattice spacings effects on scattering data in a two-nucleon system described by a contact interaction mimicking nuclear forces. Furthermore, for such contact interactions, a modified infinite-volume formalism considering finite discretizations is presented. This formalism enables the control of discretization effects in two-fermion systems up to numerical precision–which can be used to prepare computations of unitary fermions.

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