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Few-Body Physics in Finite Volume

Thursday, 3 August 2023 11:15 (35 minutes)

Simulating quantum systems in a finite volume is a powerful theoretical tool for extracting information about them. The observation that the real-world properties of states are encoded in how their discrete energy levels change with the size of the volume gives rise to a versatile approach that is relevant not only for nuclear physics, where lattice methods are now able to calculate few- and many-nucleon states, but also for other fields such as simulations of cold atomic systems.

This talk gives an overview of recent progress that has been achieved in the field of finite-volume relations and calculations. In particular, it discusses efficient techniques for simulating few-body systems in periodic boxes and presents finite-volume relations for charged particles, which are of particular relevance for nuclear physics because the vast majority of systems of interest in this field involves more than one charged particle.

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