

SYNU 2: From QCD to Nuclei

Zeit: Dienstag 11:20–12:50

Raum: S1/01 A1

Plenarvortrag SYNU 2.1 Di 11:20 S1/01 A1
Recent Results in Nuclear Lattice Effective Field Theory —
•DEAN LEE — North Carolina State University, Raleigh, USA

This talk reviews some recent progress made by the Nuclear Lattice Effective Field Theory Collaboration. In the first part I discuss an ab initio calculation of alpha-alpha scattering. This calculation uses a technique called the adiabatic projection method. In the second part I present evidence that low-density nuclear matter is near a quantum phase transition and discuss the consequences for the binding of protons and neutrons within nuclei.

Plenarvortrag SYNU 2.2 Di 12:05 S1/01 A1

Atomic nuclei from effective field theories — •THOMAS PAPENBROCK — University of Tennessee, Knoxville, USA

In recent years, we have seen a transition toward precision calculations of nuclear properties. This progress is based on ideas and applications of effective field theory (EFT), the renaissance and new development of ab initio methods with an affordable computational cost, and the sheer availability of computational cycles. This talk reviews some of the recent developments including nuclear interactions from chiral EFT with accurate saturation properties, ab initio computations of neutron-rich calcium isotopes, and the description of vibrations and rotations in heavy nuclei with quantified theoretical uncertainties.