

# NUCLEAR PHYSICS IN A BOX: HOW LATTICE QCD AND HIGH- PERFORMANCE COMPUTING ARE CHANGING THE LANDSCAPE OF THEORETICAL NUCLEAR PHYSICS

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Refreshments at 3:30 P.M. in 202 NSH

High-performance computing resources have transitioned to a point where few-body nuclear physics observables are starting to be calculated directly from Quantum Chromodynamics (QCD), the strongly interacting theory of quarks and gluons. The significance of this transition is large, and will help move theoretical nuclear physics from an historically data-driven, model-building enterprise to a predictive science. In this colloquium I provide an heuristic description of numerical methods used to calculate nuclear observables from QCD and/or effective field theories constrained by QCD, while providing an overview of the current status of such calculations. I demonstrate the predictive nature of these calculations by looking at specific hyper-nuclear systems and emphasize the potential impact these calculations will have on the nuclear physics community as a whole.