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Using LQCD to answer questions about hadronic interactions: a perspective from a traditional nuclear theorist[1]

THOMAS LUU, Lawrence Livermore National Laboratory

As computational resources increase and better algorithms are implemented, LQCD calculations of hadronic interaction observables become less of a pipe dream, and more of a reality, and will eventually become the status quo. One of the greatest strengths of LQCD calculations in the realm of low-energy nuclear physics comes from its predictive capability, as many hadronic systems not accessible by experiments can be calculated on the lattice. These calculations in turn have direct implications to nuclear structure, nuclear reactions, and nuclear astrophysics, as well as the broader nuclear physics community. Thus the import of LQCD on low-energy nuclear physics cannot be overlooked, nor understated. In this talk I discuss current and ongoing efforts to extract hadronic interaction parameters from LQCD, enumerating current difficulties placed by available computer resources and algorithm limitations. I will also talk about future possibilities coming from increased computer resources and algorithm development, giving examples of how such calculations can answer longstanding questions in traditional nuclear physics. Finally, I will discuss the role that national labs can and should play in the area of LQCD as applied to low-energy nuclear physics.

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