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Extracting the energies of multi-hadron states in lattice QCD

JUSTIN FOLEY, Carnegie Mellon University, THE HADRON SPECTRUM COLLABORATION — The ability to reliably measure the energy of an excited hadron in lattice QCD simulations hinges on the accurate determination of all lower-lying energies in the same symmetry channel. These include not only single-particle energies, but the energies of multi-hadron states. The same multi-hadron energies measured at a number of lattice volumes may also be used to determine hadron scattering lengths. In this talk, we discuss the determination of multi-hadron energies in lattice QCD. The group-theoretical derivation of lattice interpolating operators which couple optimally to multi-hadron states is described. We briefly outline recent algorithmic developments which allow for the efficient implementation of these operators in software, and present numerical results from the Hadron Spectrum Collaboration.

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