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Neutron Electric Polarizability from Lattice QCD[1] ANDREI ALEXANDRU, George Washington University, FRANK LEE, George Washington Univerity — The background field method has been used extensively in lattice QCD simulations to compute electromagnetic polarizabilities for hadrons. The extraction of electric polarizability is easier for neutral particles than for charged ones, and the best testing ground is the neutron. Previous lattice simulations produced puzzling results for its polarizability: the values seemed to agree with the experimental result, but they did not exhibit the expected chiral behavior. Recent theoretical developments coupled with new simulations show that the story is more complex. The background field method extracts the polarizabilities from the tiny shifts in the energy of the hadron placed in a static electromagnetic field. As such, it is very sensitive to the choice of boundary conditions, fitting procedure and the method used to include the electric field on the lattice. We will discuss these new developments and present our results for the neutron electric polarizability.

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Frank Lee
George Washington University

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