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Lattice QCD calculation of the nucleon electromagnetic polarizability

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The electromagnetic polarizability is an import property of nucleon. It describes the reponse of a nucleon when it is placed in an external eletric or magnetic field. The polarizability can be extracted from the real or virtual Compton scattering process $\gamma N \to \gamma N$. We develop a method to calculate the the Compton scattering matrix elements of nucleon from a 4-point correlation function on the lattice. Then we show that the electromagnetic polarizabilities can be extracted from the lattice data subsequently.

Topical area

Structure of Hadrons and Nuclei

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