

Electromagnetic and spin polarisabilities in lattice QCD

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Abstract: We discuss the extraction of the electromagnetic and spin polarisabilities of nucleons from lattice QCD. We focus first on the external field method and show it can be used to measure all the electromagnetic and spin polarisabilities including those of charged particles. We also discuss the extrapolations required to connect such calculations to experiment in the context of finite volume chiral perturbation theory. Our results for the polarisabilities show a strong dependence on the lattice volume and quark masses, typically differing from the infinite volume limit by $\sim 10\%$ for current lattice volumes and quark masses.