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# Inclusion of isospin breaking effects in lattice simulations

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Isospin symmetry is explicitly broken in the Standard Model by the non-zero differences of mass and electric charge between the up and down quarks. Both of these corrections are expected to have a comparable size of the order of one percent relatively to hadronic energies. Although these contributions are small, they play a crucial role in hadronic and nuclear physics. We explain how to properly define QCD and QED on a finite and discrete space-time so that isospin corrections to hadronic observables can be computed ab-initio. We then consider the different approaches to compute lattice correlation functions of QCD and QED observables. Finally we summarise the actual lattice computations which include isospin breaking effects.

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