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Finite volume effects and the electromagnetic contributions to kaon and pion masses

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We report on the MILC Collaboration calculation of electromagnetic effects on light pseudoscalar mesons. The simulations employ asqtad staggered dynamical quarks in QCD plus quenched photons, with lattice spacings varying from 0.12 to 0.06 fm. Finite volume corrections for the MILC realization of lattice electrodynamics have been calculated in chiral perturbation theory and applied to the lattice data. These corrections differ from those calculated by Hayakawa and Uno because our treatment of zero modes differs from theirs. Updated results for the corrections to “Dashen’s theorem” are presented.

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