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Baryon masses with C-periodic boundary conditions

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Isospin-breaking corrections pose a significant challenge to lattice simulations, both because of the splitting between the up and down quark masses and, in particular, the need to include QED effects. The RC* collaboration has developed the openQxD code, based on openQCD, which enables fully dynamical QCD+QED simulations through the implementation of C-periodic boundary conditions.

We use this code to measure baryon masses, with a special focus on the Ω^- baryon mass, whose precise determination is especially important since it has been used to set the scale of lattice simulations.

Due to the use of C-periodic boundary conditions, the two-point function of the Ω^- baryon gets additional partially connected contributions, which vanish in the infinite-volume limit and which we are computing for the first time.

We will present preliminary results for baryon masses obtained on QCD ensembles with C-periodic boundary conditions, at an unphysical pion mass of approximately 400 MeV.

Parallel Session (for talks only)

Hadronic and nuclear spectrum and interactions

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