

Towards the spectrum of flavour-diagonal pseudoscalar mesons in QCD+QED

Tuesday, July 24, 2018 6:45 PM (2 hours)

The low-lying hadron spectrum has been of tremendous phenomenological significance in resolving the nature of quark masses in strong interaction dynamics. In particular, the pseudoscalar mesons provide the foundation of the framework of chiral perturbation theory, the low-energy effective theory of QCD. Modern lattice calculations of pure QCD now provide excellent precision in the resolution of quark masses. In order to match this theory onto the observed mass scales of the standard model at sub-percent precision, it is essential to discriminate electromagnetic effects. In this work, we explore the spectrum of the flavour-diagonal pseudoscalar mesons on dynamical QCD+QED lattices. To reduce the familiar statistical noise associated with annihilation diagrams we utilise exact colour and spin dilution with a spatial interlacing for our Z_2 noise sources. In comparison with results from pure QCD, we make first estimates of the contribution of electromagnetic effects in the π_0 - η splitting.

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Session Classification: Poster reception