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Properties of the η and η' mesons Part I: Masses and decay constants

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We present results for η and η' masses at the physical point.

The two independent decay constants, e.g., for the flavour singlet/non-singlet basis, are also computed for both particles. The chiral and continuum limit extrapolation is performed on 21 CLS $n_f = 2 + 1$ Wilson Clover improved ensembles at four different lattice spacings and along two quark mass trajectories, including one ensemble very close to the physical quark mass point. For the first time the decay constants are determined directly from the axialvector matrix elements without model assumptions. This allows us to study the QCD scale dependence of the decay constants and to determine all low energy constants contributing at NLO in Large- N_c ChPT at a well defined renormalization scale.

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