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The π^0 , η and η' mesons from $n_f = 1 + 1 + 1$ lattice QCD+QED

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We present the first lattice analysis of the pseudoscalar mesons with consideration for the mixing between the flavour-singlet states π^0 , η and η' . We extract the masses and flavour compositions of the pseudoscalar meson nonet in $n_f = 1 + 1 + 1$ lattice QCD+QED around an SU(3)-flavour symmetric point, and observe interesting features of the extracted data, along with preliminary extrapolation results at physical pion mass via a novel method. We also resolve the mass splitting in the π^0 and η on our ensembles, which is found to exhibit behaviour that is simply related to the corresponding flavour compositions.

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