

Charmonium Spectrum from $N_f=3+1$ Lattice QCD

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We produced a set of gauge configurations generated with a new $N_f = 3 + 1$ massive renormalization scheme for three degenerate light quarks with a mass that equals the average light quark mass in nature and a physical charm quark mass, and a non-perturbatively determined clover coefficient for dynamical Wilson quarks on the lattice. We present the details of the algorithmic setup and tuning procedure of ensembles with three different volumes. We discuss finite volume effects and lattice artifacts and present physical results for charmonium spectra and dimensionless quantities in a first continuum limit study.

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