Quark Confinement and the Hadron Spectrum XI



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Determination of the p-n mass difference in Lattice QCD

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We compute the neutron-proton mass splitting and show that it is greater than zero by five standard deviations. Furthermore, splittings in the Sigma, Xi, D and Xi_cc isospin multiplets are determined providing also predictions. We perform lattice Quantum-Chromodynamics plus Quantum-Electrodynamics computations with four, non-degenerate Wilson fermion flavors. Four lattice spacings and pion masses down to 195 MeV are used.

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