

Chiral phase transition temperature in (2+1)-flavor QCD

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We present a lattice QCD based determination of the chiral phase transition temperature in QCD with two massless (up and down) and one strange quark having its physical mass. We propose and calculate two novel estimators for the chiral transition temperature for several values of the light quark masses, corresponding to Goldstone pion masses in the range between (approximately) 58 MeV and (approximately) 163 MeV. The chiral phase transition temperature is determined by extrapolating to vanishing pion mass using universal scaling analysis. After thermodynamic, continuum and chiral extrapolations we find the chiral phase transition temperature $T_c^0 = 132_{-6}^{+3}$ MeV.

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