

Chiral spin symmetry and the QCD phase diagram

During the last few years, an unexpected emergent approximate symmetry has been observed in Euclidean correlation functions computed on the lattice. This chiral spin symmetry, once combined with isospin symmetry, is larger than the well-known chiral symmetry, and emerges dynamically in a range between the chiral crossover and roughly three times the crossover temperature. This can only happen if colour-electric quark gluon interactions dominate the quantum effective action in that temperature range, and suggests that chiral symmetry is restored, but quarks are still strongly bound in hadron-like objects. I summarise lattice evidence from space-like and time-like correlators, as well as screening masses. Furthermore, a calculation of the pion spectral function is presented, that shows clearly discernible peaks for the pion as well as its first excitation in some temperature range above the chiral transition.

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