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# Phase diagram of two and three color QCD with various imbalances

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Phase diagram of two color and three color QCD are reviewed. The dualities of QCD phase diagram are discussed in both two and three color cases. It has been shown that the phase diagram of two color QCD is quite helpful and it has a lot of common features with three color one, and predictions recently made in two color QCD was shown to hold qualitatively in real three color QCD. Showing that two color QCD is indeed great lab to study dense quark matter. The dualities has been shown in two color QCD. Duality between chiral symmetry breaking and charged pion condensation phenomena has been demonstrated from first principles in QCD itself. Also there will be discussed color superconductivity phenomenon and the influence of chiral imbalance on its properties.

Despite the fact that the thermodynamic potential in three color case ($N_c = 3$) does not have properties of all three dualities found in the two-color case, it turned out that the phase portrait qualitatively contains these dualities.

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