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Quark number density in the phase with unbroken center Z2 symmetry in two-flavor QCD SHINPEI TAKEMOTO, MASAYASU HARADA, Nagoya University, CHIHIRO SASAKI, Technische Universitat Munchen — We study the phase structure of two-flavor QCD including the 2-quark and 4-quark states. Using the Ginzburg-Landau type approach, we show a possible existence of the phase in which the chiral $SU(2)L \times SU(2)R$ symmetry is spontaneously broken to $SU(2)V \times Z2$ symmetry, i.e., the center Z2 symmetry is left unbroken. In this Z2 symmetric phase, the chiral symmetry is broken by the 4-quark condensate although the 2-quark condensate vanishes. We find that it appears a new tricritical point between the Z2 symmetric phase and the Z2 broken phase. It is shown that the quark number susceptibility is strongly enhanced at the restoration point of the center Z2 symmetry.

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