

What is chiral susceptibility probing?

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The chiral susceptibility, or the first derivative of the chiral condensate, is used as a probe for QCD phase transition. It is well-known that the chiral condensate is an order parameter of $SU(2)_L \times SU(2)_R$ symmetry breaking. However, the condensate also breaks the axial $U(1)$ symmetry, which is usually not paid attention as it is already broken by anomaly. In this talk, we would like to show a surprising numerical result by JLQCD collaboration that the chiral susceptibility is dominated by the axial $U(1)$ anomaly at high temperature. Namely, the chiral susceptibility is probing the temperature dependence of anomaly, rather than that of $SU(2)_L \times SU(2)_R$.

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