

Abstract Submitted
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Topological charge and susceptibility at finite temperature in a random matrix model MUNEHISA OHTANI, Kyorin University — Random matrix model is known to describe the chiral phase transition of QCD qualitatively, but at finite temperature it suppresses the topological susceptibility in the thermodynamic limit by the inverse of the volume V . We propose a modified model in which the topological susceptibility at finite temperature behaves reasonably. In the microscopic domain of QCD, where the Compton wavelength of the pion is much larger than the size of the box, the quark mass m dependence of the QCD partition function in a fixed topological charge becomes insensitive to the topological charge for $mV\Sigma \gg 1$ with the chiral condensate Σ in the chiral limit. Applying this property to a random matrix model at finite temperature, we show that an additional normalization factor is required for the partition function at the fixed topology. We report that the random matrix model with the additional factor to satisfy the universal behavior of the partition function agrees with the modified model to make the topological susceptibility well-defined.

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