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Color screening in 2+1 flavor QCD

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Content

We study correlation functions of a static quark antiquark pair in spatial separation in 2+1 flavor QCD in order to better understand the nature of color screening at high temperatures. We performed lattice calculations in a wide temperature range $140 \text{ MeV} \leq T \leq 5.8 \text{ GeV}$ using the highly improved staggered quark (HISQ) action and several lattice spacings to control discretization effects. By comparing our lattice results to the weak-coupling calculations as well as to the zero temperature result on the energy of a static quark anti-quark pair we show that color screening sets in at distances $rT \sim 0.3$. We also conclude that in the distance range $0.3 < rT < 0.6$ the weak coupling approach provides an adequate picture for color screening.

Preferred track (if multiple tracks have been selected)

None

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