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Complex potential at T>0 from fine lattices

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We study the Wilson line correlation function in Coulomb gauge on $96^3 \times$ Nt lattices in 2+1 flavor QCD with physical strange quark and light quark masses corresponding to pion mass of 310 MeV, with the aim to determine the complex potential at non-zero temperature. In our calculation we use HISQ action in fixed scale approach with lattice spacing 1/a=7.1 GeV and Nt=56,36,32,28,24,20, corresponding to temperatures T=127, 197, 221, 253, 296, 354 MeV, respectively. To reduce the noise in the correlator calculations we apply gradient flow. From the analysis of the Wilson line correlation function we conclude that the corresponding spectral function is well described by a dominant peak. The peak position corresponds to the real part of the potential, while the effective width of the peak gives the imaginary part of the potential. We find that the real part of the potential is temperature independent and shows no sign of screening, while the imaginary part shows a strong temperature dependence.

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