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Static quark-antiquark interactions at non-zero temperature from lattice QCD

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We study the interactions of a static quark-antiquark pair at non-zero temperature using realistic (2+1)-flavor lattice QCD calculations. The study consists of two parts: the first investigates the properties of Wilson line correlators in Coulomb gauge and compares to predictions of hard-thermal loop perturbation theory. As a second step we extract the spectral functions underlying the correlators using four conceptually different methods: spectral function fits, a HTL inspired fit for the correlation function, Padé rational approximation and the Bayesian BR spectral reconstruction. We find that our high statistics Euclidean lattice data are amenable to different hypotheses for the shapes of the spectral function and we compare the implications of each analysis method for the existence and properties of a well defined ground state spectral peak.

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