

Complex Heavy Quark Potential at Finite Temperature from Gauge/Gravity Duality

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We study the complex potential between a heavy quark and an anti-quark at finite temperature in large N_c and large 'tHooft coupling limit through the gauge/gravity duality[1]. The complex potential at separation r is obtained from a direct analytic continuation of the thermal Wilson loop which is always real in the Euclidean metric. We confirm that there is an imaginary part at finite temperature, which grows as a function of r . We also compare our result with the one from the recent lattice QCD simulation[2].

The gauge/gravity duality suggests the importance of competition between the real part and the imaginary part of the potential for the strongly coupled quark gluon plasma.

References

[1] K. Nawa, T. Hayata and T. Hatsuda, in progress.

[2] A. Rothkopf, T. Hatsuda and S. Sasaki, Phys. Rev. Lett. 108, 162001 (2012).

Keywords

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