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In-medium static quark potential from spectral functions on realistic HISQ ensembles

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We study the static energy between a quark anti-quark pair in a thermal medium based on ensembles with $N_f = 2 + 1$ dynamical HISQ flavors. Our dataset spans the phenomenologically relevant temperature range between T=140MeV-2GeV based on lattice sizes 48^3 x10,12 and 16. The real- and imaginary part of the potential is determined from the spectral function of Wilson-line correlators in Coulomb gauge. We assess the information content in the correlation functions and deploy three complementary strategies to reconstruct spectral information: model fits, Pade approximation and the Bayesian BR method. Limitations of each approach are carefully assessed.

Author: PARKAR, Gaurang (University Of Stavanger)

Co-authors: MUKHERJEE, Swagato (Brookhaven National Laboratory); PETRECZKY, Peter (BNL); LARSEN, Rasmus Normann (State University of New York (US)); KACZMAREK, Olaf (University of Bielefeld); ROTHKOPF, Alexander (University of Stavanger); Dr WEBER, Johannes Heinrich (Munich University of Technology (TUM)); BALA, Dibyendu (Bielefeld University)

Presenter: PARKAR, Gaurang (University Of Stavanger)

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