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A Static Potential from $Q\bar{Q}$ Free Energy Lattice QCD Data SHUAI LIU, RALF RAPP, Texas A&M University — A long-standing problem in the physics of the QGP is the definition of the in-medium potential between two heavy quarks $Q\bar{Q}$. We develop a formalism that enable us to obtain a potential from $Q\bar{Q}$ free energy lattice QCD data. The resulting potential lies significantly above the $Q\bar{Q}$ free energy and more closely resembling the internal energy. This potential is characterized by a significant long-distance contribution from the remains of the confining force. This long range potential provides more binding than free energy and generates a larger transport coefficient. The set-up in this paper gives insights into the long-standing problem of finding the QCD force in medium.

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