

Abstract Submitted
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A light-front wavefunction approach to heavy quark dynamics in the QGP¹ IVAN VITEV, RISHI SHARMA, BENWEI ZHANG, LANL — We calculate the charm and beauty fragmentation functions in the vacuum using their operator definitions in factorized perturbative QCD and find leading corrections that arise from the structure of the final-state hadrons. In the framework of potential models we demonstrate the existence of open heavy flavor bound states in the QGP in the vicinity of the critical temperature and provide first results for the in-medium modification of the heavy quark distribution and decay probabilities in a co-moving plasma. In an improved perturbative QCD description of heavy flavor dynamics in the thermal medium we combine D and B meson formation and dissociation with parton-level charm and beauty quark quenching to obtain predictions for the heavy meson and non-photonic electron suppression in Cu+Cu and Pb+Pb collisions at RHIC and the LHC, respectively. We discuss possible applications of this theoretical approach to the production of charmonium and bottomonium states in heavy ion reactions.

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