

Heavy Flavor Transport in QCD Matter

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Measurements of heavy-flavor particles encode unique insights into the properties and interactions of QCD matter, enabling systematic investigations as a function of the resolution scale from vanishing to large momenta. This includes the heavy-flavor diffusion coefficient as a low-momentum measure of the medium's coupling strength, the effects of recombination of heavy quarks with thermal partons as a measure of hadronization mechanisms and the change in degrees of freedom in the system, and the parton energy loss transport coefficient to characterize the coupling strength at high p_T . We discuss various theoretical approaches to evaluate these properties and estimate values for the transport coefficients resulting from current model-to-data comparisons. We also estimate the momentum scales where radiative processes for charm and for bottom quarks become relevant.

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