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The medium-modified $g \to c\bar{c}$ splitting function in the BDMPS-Z formalism

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The formalism of Baier-Dokshitzer-Mueller-Peigné-Schiff and Zakharov (BDMPS-Z) determines modifications of parton splittings in the QCD plasma that arise from medium-induced gluon radiation. Here, we extend the BDMPS-Z formalism to medium-modifications of the gluon splitting into two massive quarks of mass m. We derive a compact path-integral formulation that resums effects from arbitrary many interactions with the medium. We identify two qualitatively different phenomena: a medium-induced momentum broadening that increases the invariant mass of quark-anti-quark pair and a medium-enhanced production of such pairs. We note that both effects are numerically sizeable if the average squared momentum transfer from the medium is comparable to m^2. In ultrarelativistic heavy-ion collisions, this condition is satisfied for cham quarks.

Present via

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