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Soft gluon emission from heavy quark scattering in sQGP

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We apply the Low's theorem to soft gluon emission from the heavy quark scattering in nonperturbative strongly interacting quark-gluon plasma (sQGP). The sQGP is described in terms of the DQPM (dynamical quasiparticle model) based on propagator representation in 2PI representation and adjusted to reproduce the EoS from lQCD at finite temperature and chemical potential. Since emitted gluon is soft and of long wavelength, it does not provide the information on the detailed structure of the scattering, since only the emission from incoming and outgoing partons is accounted. It simplifies the calculations making amplitude factorizable into the leading-order scattering and the emission of soft gluon. Imposing a proper upper limit on the energy of emitted gluon, we obtain the scattering cross sections of charm quark with the off-shell partons of the medium as well as the transport coefficients (momentum drag and diffusion) of charm quark in QGP and compare with those only from the leading-order calculations, i.e. elastic scattering.

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