Transport Coefficients of Quark-Gluon Plasma Within the Quasiparticle Model

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The analysis of experimental data obtained in heavy ion collisions at RHIC and LHC showed that the evolution of the QGP is well described by nearly ideal hydrodynamics [1]. Nevertheless, we deal with the relativistic viscous hydrodynamics, which is characterized by the transport coefficients, for example, the shear η and bulk ζ viscosities. Those are the parameters that quantify dissipative processes in the hydrodynamic evolution of a fluid. Their values and properties not only carry information on how far the system appears from an ideal hydrodynamics but also provide a relevant insight into the fluid dynamics and its critical phenomena [2].

To obtain the transport coefficients of QGP, I consider the quasiparticle model, in which masses of quarks and gluons depend on temperature. In comparison with some effective models of QCD, the quasiparticle model includes the quark-gluon and gluon-gluon interactions, such as Compton or Coulomb scattering. These processes should be taken into account because they are responsible for the collisional energy loss which would influence the values of η and ζ [3]. It is important to provide reliable values of transport coefficients in understanding the dynamics of the QGP and its expansion, before the hadronization sets in.

[1] C. Sasaki, K. Redlich, Nucl. Phys. A **832**, 62-75 (2010).
[2] C. Sasaki, K. Redlich, Phys. Rev. C **79**, 055207 (2009).
[3] R. D. Pisarski, V. V. Skokov, Phys. Lett. B **730**, 236-242 (2014).