

Viscosity of quark plasma

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The microscopic calculation of the shear viscosity η and of its ratio to the entropy density s for a system of quarks are presented.

This subject has been widely discussed in recent times, on the basis of the intriguing results from the experiments carried out at the Relativistic Heavy Ion Collider (RHIC). In particular the measurement of the v_2 coefficient in the multipole analysis of the angular distribution of the produced hadrons seems to imply a very small viscosity, like the one of an almost perfect fluid, in contrast with the current description of the QGP as a gas of weakly interacting quasi-particles. The substantial collective flow observed in these collisions also seems to imply quite small values for the viscosity.

The quark viscosity in the quark gluon plasma is evaluated in Hard Thermal Loop (HTL) approximation. The different contributions to the viscosity arising from the various components of the quark spectral function are discussed. The calculation is extended to finite values of the chemical potential.

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