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Recent progresses in viscous hydrodynamics and the shear viscosity of the QGP

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One of the most important finding in the recentyears at both Relativistic heavy ion collider (RHIC) and at Large Hadron Collider (LHC) is the existence of a strongly interacting almostperfect nuclear fluid which is produced in high energy heavy ion collision. BothLattice QCD and string theoretical calculation of the transport properties of theQCD matter at high density and temperature shows that the ratio of shear viscosityto entropy density (η/s) of the QCD matter reaches a very low value whichis believed to be the lowest among allknown fluids. However, these theoretical calculations contain largeuncertainties. One can also estimate the value of transport coefficients(shear, bulk viscosity) of QCD matter by means of phenomenological model studye.g, relativistic viscous hydrodynamics. However, the extracted value of $\eta/s$from viscous hydrodynamics relies on some strong assumption about the initialconditions as well as other input parameters used in the model. In this talk Iwill mainly focus on the recent progresses in the field of viscous hydrodynamicsto extract the value of η/s from the experimental data. I will also discusssome open problems related to viscous hydrodynamics which immediately needs attention in order to preciselyestimate the value of η/s from experimental data.

Keywords

QGP viscosity, relativistic hydrodynamics

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