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Is QGP really a liquid?

Content :

Plan to test QCD (Quantum ChromoDynamics) lead to the idea of a QGP (Quark Gluon Plasma), an ideal gas of quarks and gluons. But the study of QGP using lattice gauge theory (LGT) and relativistic heavy ion collisions (RHICs) lead to a surpraising result that QGP may not be an ideal gas. It was speculated that this non-ideal QGP may be a liquid, eventhough no strict definition of liquid is known for QGP. It may be interesting to look into SCP (Strongly Coupled Plasma) of QED (Quantum ElectroDynamics), where, based on the strength of plasma parameter, system may be classified as SCP, liquid or solid. We have developed SCP of QGP, called SCQGP, which gives a remarkable good fit to LGT results. We found that, based on plasma parameter which fits LGT results, QGP is not liquid but Scp, except at very narrow region of temperature, Tc < T < 1.5 Tc. Interestingly, same conclusion is also drawn from our recently developed quasiparticle model (qQGP). This qQGP with single system dependent parameter also explains very well the LGT results. Detailed results will be presented in the conference.

Collaboration :

Nil

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