APR08-2008-000409

Abstract for an Invited Paper
for the APR08 Meeting of
the American Physical Society

Introduction to strongly coupled quark-gluon plasma

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Quark-gluon plasma is a deconfined phase of QCD, at temperatures above $Tc \approx 170\, MeV$. Analysis of RHIC experiments and also lattice data have shown that it is not just a weakly coupled gas of quarks and gluons, as anticipated at large T. Strongly coupled plasmas can be studied via gauge-string duality known as AdS/CFT, which relates its properties to 5d black hole physics. I will mostly focus on another duality – electric-magnetic one. It was recently realized that QGP near Tc has significant fraction of (color)-magnetically charged quasiparticles – monopoles, and those Bose-condense below Tc. Molecular dynamics for plasma made of both electrically and magnetically charged particles revealed unusual properties: one of them significant increase of collision rate and decrease of diffusion and viscosity. At the end of the talk, results for transport coefficients from AdS/CFT and MD will be compared to empirical ones from RHIC data.