

QCD Plasma Equilibration and Collective Effects

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Early equilibration still constitutes one of the major questions in understanding the behaviour and transport properties of the QGP. We review recent progress within two new transport descriptions: On the one hand new developments concerning classical field dynamics with self-consistent field-particle interaction are reviewed, and we present studies of plasma instabilities and prethermalization within the simulations. On the other hand, employing the relativistic pQCD based parton cascade BAMPS, elliptic flow of gluon matter with its dependence on centrality, rapidity and transverse momentum is discussed. Perturbative gluon bremsstrahlung and manybody interactions contribute significantly to fast thermalisation and the large calculated v_2 value. With this at hand we extract the shear viscosity to entropy ratio within this pQCD approach to be $\eta/s \approx 0.08 - 0.15$, i.e. as small as the AdS/CFT conjecture.