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Estimation of the shear viscosity at finite net-baryon density from A+A collision data at $\sqrt{s_{NN}} = 7.7 - 200$ GeV

Wednesday 30 September 2015 11:30 (20 minutes)

We present the first application of state-of-the-art 3D viscous hybrid model to heavy ion collisions at RHIC Beam Energy Scan (BES) energy range $\sqrt{s} = 7.7 \ldots 200$ GeV. The model employs the hadron transport approach UrQMD for the early and late non-equilibrium stages of the reaction, and 3+1 dimensional viscous hydrodynamics for the hot and dense quark-gluon plasma stage. It includes the equation of motion for finite baryon number, and employs an equation of state with finite net-baryon density to allow for calculations in a large range of beam energies. The parameter space of the model is explored, and constrained by comparison with the experimental data for bulk observables from SPS and the phase I BES at RHIC. The favored value of the shear viscosity coefficient over entropy density ratio η/s in the fluid phase depends on collision energy. It increases with decreasing collision energy, which may indicate that η/s of the quark-gluon plasma increases with increasing baryochemical potential
μ_B.

Ref: Iu.A. Karpenko, P. Huovinen, H. Petersen, M. Bleicher, Phys. Rev. C 91, 064901 (2015)

On behalf of collaboration:

NONE

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