

Latest results from the EbyE NLO EKRT model

Wednesday, February 8, 2017 9:30 AM (20 minutes)

We review the recent results from the event-by-event NLO pQCD + saturation + viscous hydrodynamics (EbyE NLO EKRT) model [1,2,3], where we perform a simultaneous analysis of LHC and RHIC bulk observables to systematically constrain the temperature dependence of the QCD matter shear viscosity-to-entropy ratio $\eta/s(T)$, and to test the initial state computation. In particular, we study the centrality dependences of hadronic multiplicities, p_T spectra, flow coefficients, probability distributions of relative elliptic flow fluctuations, and various flow-correlations in 2.76 and 5.02 TeV Pb+Pb collisions at the LHC and 200 GeV Au+Au collisions at RHIC [1,2]. Overall, our results match remarkably well with the LHC and RHIC measurements, and our predictions for the 5.02 TeV LHC run are in an excellent agreement with the latest data. We also explore the applicability of viscous hydrodynamics by quantifying the magnitude of δf corrections in the studied flow observables, and by charting the space-time evolution of the Knudsen number for the studied $\eta/s(T)$ parametrizations [3].

[1] H. Niemi, K. J. Eskola and R. Paatelainen, Phys. Rev. C93 (2016) 2, 024907, arXiv:1505.02677 [hep-ph].

[2] H. Niemi, K. J. Eskola, R. Paatelainen and K. Tuominen, Phys. Rev. C93 (2016) 1, 014912, arXiv:1511.04296 [hep-ph].

[3] H. Niemi, K. J. Eskola and R. Paatelainen, work in progress

Preferred Track

Initial State Physics and Approach to Equilibrium

Collaboration

Not applicable

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Session Classification: Parallel Session 5.2: Initial State Physics and Approach to Equilibrium (III)

Track Classification: Initial State Physics and Approach to Equilibrium