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Constraining properties of strongly interacting matter using CHIMERA IRAKLI GARISHVILI, BETTY ABELEV, ANDREW GLENN, RON SOLTZ, Lawrence Livermore National Laboratory — More then a decade of fascinating experimental measurements at RHIC and the LHC, and recent theoretical developments have lead to a much better understanding of the essential properties of strongly interacting matter believed to be produced in relativistic heavy ion collisions. However, these properties, in particular, ratio of shear viscosity to entropy density, eta/s, and initial temperature, T_{init}, has not been yet constrained. To address this challenge we have developed CHIMERA, Comprehensive Heavy Ion Model Reporting and Evaluation Algorithm, a framework designed to facilitate global statistical comparison of results from our multi-stage hydrodynamics/hadron cascade model of heavy ion collisions to the key soft observables (spectra, elliptic flow, HBT) measured at RHIC and the LHC. Within this framework the data representing multiple different measurements from different experiments are combined into single format. A unique feature of CHIMERA is, that in addition to taking into account statistical errors, it also treats different types of systematic uncertainties. The hydrodynamics/hadron cascade model used in the framework incorporates different initial state conditions, pre-equilibrium flow, the UVH2+1 viscous hydro model, Cooper-Frye freezeout, and the UrQMD hadronic cascade model. The sensitivity of the observables to the equation of state (EoS) is explored using several EoS's in the hydrodynamic evolution. The latest results from CHIMERA, including most recent analysis of the LHC data, will be presented.

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