Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Bulk and shear thermal fluctuations in heavy-ion collisions MAYANK SINGH, McGill University, CHUN SHEN, Wayne State University, SANGYONG JEON, CHARLES GALE, McGill University — Hydrodynamical simulations of heavy-ion collisions largely ignore the thermal fluctuations demanded by the fluctuation-dissipation theorem. In this talk we present our full calculations showing the effect of fluctuations corresponding to both shear and bulk dissipation on the heavy-ion collision simulations, for the first time. Stochastic terms corresponding to thermal fluctuations are introduced in the state of the art (3+1) D viscous hydrodynamics package MUSIC. By the technique of noise filtering - selectively removing high wavenumber modes above a cutoff (λ_{cut}) - we are able to consistently introduce thermal noise as source terms for hydrodynamics fields [1]. We use IP-Glasma initial states and UrQMD hadronic cascade along with MUSIC to realize a comprehensive modeling. Our calculations quantify the impact of thermal fluctuations on two-point correlation in both short and long range. We compare our approach with the complementary hydro-kinetic method of studying hydrodynamic fluctuations in a Bjorken background flow. Renormalization group flow of transport coefficients as a function of λ_{cut} will also be discussed. [1] Singh, M., Shen, C., McDonald, S., Jeon, S. and Gale, C., Nucl. Phys. A 982, 319-322 (2019)

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Date submitted: 29 Jun 2019 Electronic form version 1.4