Quark Matter 2015 - XXV International Conference on Ultrarelativistic Nucleus-Nucleus Collisions

QUARK MATTER 2015
Sep. 27 – Oct. 3, 2015 Kobe, Japan

Contribution ID: **494** Type: **Poster**

Viscous corrections to anisotropic flow and transverse momentum spectra within a transport approach

Tuesday 29 September 2015 16:30 (2 hours)

Viscous hydrodynamics is commonly used to model the evolution of the matter created in an ultra-relativistic heavy-ion collision. It provides a good description of transverse momentum spectra and anisotropic flow. These observables, however, cannot be consistently derived using viscous hydrodynamics alone, because they depend on the microscopic interactions at freeze-out. We derive the ideal hydrodynamic limit and the first-order viscous correction to anisotropic flow (v_2 , v_3 and v_4) and momentum spectrum using a transport calculation [1]. We find that the linear response coefficient to the initial anisotropy, $v_n(p_T)/\epsilon_n$, depends little on n in the ideal hydrodynamic limit. The viscous correction to the spectrum depends not only on the differential cross section, but also on the initial momentum distribution. This dependence is not captured by standard second-order viscous hydrodynamics. The viscous correction to anisotropic flow increases with p_T in agreement with the recent analytical solutions of viscous hydrodynamic [2].

[1] S. Plumari, G. L. Guardo, V. Greco, J.Y. Ollitrault, Nucl.Phys. A 941 (2015) 87-96.

[2] Y. Hatta, J. Noronha, G. Torrieri, B.W. Xiao, Phys.Rev. D 90 (2014) 7, 074026.

On behalf of collaboration:

NONE

Author: PLUMARI, Salvatore (University of Catania (Italy))

Co-authors: Dr GUARDO, Giovanni Luca (INFN-LNS); OLLITRAULT, Jean-Yves (CNRS); GRECO, Vincenzo (University of Catania)

Presenter: PLUMARI, Salvatore (University of Catania (Italy))

Session Classification: Poster Session

Track Classification: Collective Dynamics