

Transiting the QCD Critical Point

Thursday 10 August 2017 12:00 (30 minutes)

Building on an analysis of hydrodynamic long time tails for a Bjorken expansion (Akamatsu 2016), we discuss the hydrodynamic scales associated with transiting the critical point. First, we consider the case where the nuclear medium passes directly through the critical point. In this case, the modes with wave-number of order the inverse Kibble-Zurek length and smaller fall out of equilibrium during the transit, and limit the growth of critical fluctuations in a characteristic way which depends on the wave-numbers involved. This Kibble-Zurek wavenumber will be contrasted to smaller wave numbers associated with “long-time-tails” which are always out of equilibrium, even away from the critical point (Akamatsu 2016). Subsequently we generalize to the situation when the system misses the critical point by an amount, Δ . In this case there is an additional scale, and Kibble-Zurek scaling is only relevant if Δ is sufficiently small. We will define “sufficiently small” in the talk and analyze the intermediate case.

References:

Y. Akamatsu, A. Mazeliauskas and D. Teaney, “A kinetic regime of hydrodynamic fluctuations and long time tails for a Bjorken expansion,” Phys. Rev. C95, no. 1, 014909 (2017 [arXiv:1606.07742 [nucl-th]]).

Author: TEANEY, Derek (Stony Brook)

Co-authors: Mr YAN, Fanglida (Stony Brook University); YIN, Yi (MIT); Dr AKAMATSU, Yukinao (Osaka University)

Presenter: TEANEY, Derek (Stony Brook)

Session Classification: Plenary

Track Classification: Parallel Session