



Contribution ID: 141

Type: **bullet talk (poster)**

Probing quark-gluon plasma at “mesoscopic scale” via jet-medium interaction

Wednesday, January 13, 2021 7:45 PM (1h 30m)

We study the response of a Bjorken-expanding quark-gluon plasma (QGP) to the passage of an energetic parton through it. By comparing results from Boltzmann equation under the relaxation time approximation with those from viscous hydrodynamics, we observe that the non-hydrodynamic response is significant when the medium excitations with wavelength shorter than the inverse of the relaxation time are not fully damped. Such non-hydrodynamic response is characterized by a supersonic effective group velocity and a dissipative rate smaller than the viscous damping. We construct a novel model which is similar to Müller-Israel-Stewart (MIS) theory, but contains two additional free parameters that respectively control the effective group velocity and dissipation in the non-hydrodynamic regime. We demonstrate how to use this model to describe both the non-hydrodynamic and hydrodynamic response, and discuss applying of this model to extract the properties of QGP at the “mesoscopic scale” through jet-medium interaction.

Primary authors: YIN, Yi (IMP); KE, Weiyao (University of California, Berkeley; Lawrence-Berkeley National)

Presenter: YIN, Yi (IMP)

Session Classification: Poster

Track Classification: Collective dynamics from small to large systems