Contribution ID: **128** Type: **not specified**

Exploring jet transport coefficients in the strongly interacting quark-gluon plasma

Friday, May 27, 2022 9:55 AM (20 minutes)

We study the interaction of leading jet partons in a strongly interacting quark-gluon plasma (sQGP) medium based on the effective dynamical quasi-particle model (DQPM). The DQPM describes the non-perturbative QCD nature of the sQGP at finite temperature T and baryon chemical potential μB based on a propagator representation in terms of massive off-shell partons (quarks and gluons) which properties (characterized by complex self-energies, i.e. masses and widths) are adjusted to reproduce the lQCD EoS for the QGP in thermodynamic equilibrium. We present the results for the jet transport coefficients such as q^, the transverse momentum transfer per unit length, the drag coefficient A as well as the energy loss per unit length ΔE=dE/dx, in the QGP and investigate its dependence on QGP properties such as medium temperature T and baryon chemical potential μB as well as on the jet properties such as leading jet parton momentum, mass, flavor, and the strong coupling constant. In this first study only elastic scattering processes of leading jet parton with the sQGP partons are explored discarding presently the radiative processes (such as gluon Bremsstrahlung) which are expected to be suppressed for the emission of massive gluons. We present a comparison of our results for the elastic energy loss in the sQGP medium with other theoretical approaches such as lattice QCD and the LO-HTL as well as with estimates of q^ by the JET and JETSCAPE collaborations based on a comparison of hydrodynamical calculations with the experimental heavy-ion data.

Presenter: GRISHMANOVSKII, Ilia (ITP, Frankfurt)