



Contribution ID: 1004

Type: Oral presentation

Comprehensive study of multi-scale jet-medium interaction

Tuesday, 5 April 2022 18:30 (20 minutes)

We explore jet-medium interactions at various scales in high-energy heavy-ion collisions using JETSCAPE 3, a publicly available software framework for Monte Carlo event generators. In jet shower evolution, the virtuality and energy of each jet parton vary considerably. Thus, in high-energy heavy-ion collisions, jets can be used as dynamical probes to investigate the jet-medium interaction at various scales. JETSCAPE is a framework that enables simulations describing physics at varying scales involved in in-medium jet evolution. The JETSCAPE framework incorporates multiple models, each effective at an individual scale range, and switches between them at appropriate scales while mediating their communication.

As a new feature, the jet quenching strength \hat{q} with an explicit virtuality dependence depending on the resolution scale evolution of jets is now supported by JETSCAPE. In this talk, we demonstrate that this further extension is crucial for a simultaneous description of the nuclear modification factor for inclusive jets and leading hadrons. For more detailed discussion of the virtuality dependence in the jet-medium interaction, observables for jet substructures, heavy-flavor jets, and photon-triggered jets are also explored. Furthermore, we investigate the jet-medium interaction involved in the hadronization process.

Primary author: TACHIBANA, Yasuki (Akita International University)

Presenter: TACHIBANA, Yasuki (Akita International University)

Session Classification: Parallel Session T03: QCD matter at finite temperature and density

Track Classification: QCD matter at finite temperature and density