



Contribution ID: 15

Type: **not specified**

## Heavy quark transport: from heavy flavor hadrons to heavy flavor jets

*Sunday 29 September 2024 17:30 (20 minutes)*

We develop a linear Boltzmann transport model to describe the evolution of heavy and light flavor partons inside the QGP. By taking into account both elastic and inelastic scattering processes and both Yukawa (perturbative) and string (non-perturbative) interactions, we provide a good description of open heavy flavor hadron phenomenology from low to high transverse momenta. This model is then implemented to investigate the nuclear modification of  $B_c$  mesons, where we find sensitivities of their dissociation and regeneration processes to the interaction dynamics between heavy quarks and the QGP. In the end, we extend our study from heavy flavor hadrons to heavy flavor jets, and explore the effects of parton energy loss, medium-induced gluon emission, and jet-induced medium excitation on the energy-energy correlations (EECs) inside jets. By comparing the EECs between light flavor jets,  $D$ -tagged jets and  $B$ -tagged jets in proton-proton and nucleus-nucleus collisions, we find a clear flavor hierarchy of EECs at small angles between jet constituents, signifying the dead cone effect on both vacuum and medium-modified parton showers. Medium-induced gluon emission and jet-induced medium excitation are shown to play essential roles in enhancing the EECs at large angles.

### Category

Theory

### Collaboration

**Author:** CAO, Shanshan (Shandong University)

**Co-authors:** Ms XING, Wen-Jing (CCNU); Ms ZHANG, Lejing (Shandong University); QIN, Guang-You (Central China Normal University)

**Presenter:** CAO, Shanshan (Shandong University)

**Session Classification:** Session 10