

ID de Contribution: 126

Type: Talk

## Mass hierarchy of heavy quark energy loss within a perturbative-non-perturbative transport model

*mardi 4 juin 2024 08:50 (20 minutes)*

The general intuition that heavier partons suffer weaker energy loss inside a quark-gluon plasma (QGP) medium is critically re-examined. Within a linear Boltzmann transport model that includes both Yukawa and string types of interactions between heavy quarks and the QGP, we find that while the radiative energy loss is suppressed by the parton mass, heavier partons can experience stronger string potential scatterings with the medium. Their competition may result in less energy loss of bottom quarks than charm quarks at low transverse momentum ( $p_T$ ) but an inverse order at high  $p_T$ . Our model calculation shows a weaker nuclear modification on bottom particles than charm particles at low  $p_T$ , as observed by both RHIC and LHC experiments, but predicts an opposite hierarchy at high  $p_T$ . A larger momentum space transport coefficient ( $\hat{q}$ ) and a smaller spatial diffusion coefficient ( $D_s$ ) are found for bottom quarks than for charm quarks.

Reference: arxiv 2307.14808

**Auteur principal:** DANG, Yichao (Shandong University)

**Co-auteurs:** Dr XING, Wenjing (Shandong University); Prof. CAO, Shanshan (Shandong University); Prof. QIN, Guangyou (Central China Normal University)

**Orateur:** DANG, Yichao (Shandong University)

**Classification de Session:** Track2-HF&Q

**Classification de thématique:** Heavy-Flavours & Quarkonia