

Using separated bottom and charm contribution to pin down the role of radiative energy loss for heavy quarks

One of the most promising probes to study deconfined matter created in high energy nuclear collisions at RHIC and LHC is the energy loss of (heavy) quarks. It has been shown in experiments at the Relativistic Heavy Ion Collider that even charm and bottom quarks, despite their high mass, experience a remarkable medium suppression in the Quark Gluon Plasma.

Although various features of heavy quark physics have been understood, several challenges remain. To further study the energy loss mechanism it is not only necessary to separate charm and bottom quarks but also to separate the two sources of energy loss, collisional or radiative energy loss.

In this contribution we present a method for extracting the difference between collisional and radiative energy loss of heavy quarks.

By analyzing separated bottom and charm contributions to the heavy quark spectrum one can gain information about the relative strength of radiative and collisional energy loss.

This talk will give a detailed explanation of how one can separate this information experimentally and what we can learn from this analysis with respect to heavy quark energy loss. By using existing experimental data we will constrain the parameter space of energy loss physics and rule out several model parametrizations.

A systematic parameter check with regard to RHIC data is carried out and perspectives for RHIC upgrades and the LHC will be presented.

Primary author: Dr VOGEL, Sascha (Subatech)

Co-authors: Prof. AICHELIN, Joerg (Subatech); Prof. GOSSIAUX, Pol Bernard (Subatech); Prof. KABANA, Sonia (Subatech); Mr BOROWSKI, Witold (Subatech)

Presenter: Dr VOGEL, Sascha (Subatech)

Track Classification: Heavy flavor and quarkonia production