

Department of Theoretical Physics

Free Meson Seminar

<i>Speaker</i>	:	Umme Jamil (VECC, Kolkata)
<i>Topic</i>	:	Nuclear suppression of heavy quarks at RHIC and LHC
<i>Day, Date & Time</i>	:	Thursday, September 23, 2010 at 2:30 p.m.
<i>Place</i>	:	AG 69

Abstract

One of the prime objective of the relativistic heavy ion collision experiments is to confirm the formation of Quark Gluon Plasma (QGP) and also to study its properties. The observed large elliptic flow, jet-quenching, and the recombination of partons as the mechanism of production of hadrons at intermediate transverse momenta at RHIC, gives evidence towards the formation of QGP.

Heavy quarks are produced from the initial fusion of gluons or light quarks at a time, $1/2MQ$, which is much less than $0.1 \text{ fm}/c$, i.e much before the formation of QGP phase and there will be negligible production of heavy quarks at later times.

Before fragmentation to heavy hadrons, these quarks will pass through the QGP, colliding with quarks and gluons and radiating gluons. In this process they will loose energy and the hadrons thus produced would carry information of the energy loss suffered by the heavy quarks.

As the centre of mass energy at LHC is more than 25 times that that at RHIC, we expect more particle production at forward rapidity regions at LHC which provide an opportunity to study these effects at more forward rapidities. In our procedure we relate the change in rapidity in terms of temperature. Thus the various treatments for energy loss suffered by heavy quarks, available in the literature, can be put to a rigorous test by studying the energy loss of heavy quarks at RHIC and LHC energies at different rapidities. With the increase of the centre of mass energy, nuclear shadowing effect also becomes important.

We study these effects by studying the nuclear modification factor RAA for heavy quarks at forward rapidities.

(Nilmani Mathur)