Title:	Parton Energy Loss in QGP
Authors:	Datta, Ritoban
Keywords:	Parton Energy QGP
Issue Date:	Apr-2022
Publisher:	IISER Mohali
Abstract:	The force that predominantly bounds the quarks in hadrons and mesons is the strong force. Just like any other type of force, the strong force has its own coupling constant. The peculiar nature of the strong force coupling constant leads to the formation of Quark-Gluon Plasma (QGP) at high energy density and temperature conditions. This deconfined state of quarks and gluons is artificially created in collider facilities like the Large Hadron Collider (LHC) and Relativistic Heavy Ion Collider (RHIC) by smashing ultrarelativistic ions. A plethora of types and amounts of particles are formed from this collision. These entities pass through the QGP, and many get recombined to form subatomic particles. The detectors are responsible for detecting these particles. The main goal of this thesis is to study the signatures of QGP left with these particles. Using a ther- modynamic and statistical toy construction, we first try to find a function that could fit the heavy-ion transverse momentum (p t) spectrum. The results from these experiments are used to distinguish the soft and hard parts of collision in the nuclear modification factor (R AA) spectrum. Disentangling soft and hard yields is a cumbersome problem. However, using the potential of Pearson distribution, we try to attempt this complex task. Finally, a new systematic expression of R AA is derived utilizing the Boltzmann transport prescription. This work indirectly reflects the edge that the Pearson distribution provides with respect to other choices of p t fits. The recent publication on Pearson distribution as the model equation to fit the heavy-ion collision transverse momentum spectra has led me to apply its potential to various applications.
URI:	http://hdl.handle.net/123456789/4159
Appears in Collections:	MS-17

Files in This Item:

File	Description	Size	Format	
Yet to obtain consent.pdf		144.56 kB	Adobe PDF	View/Open

Show full item record