Contribution ID: **630** Type: **Poster**

Phenomenological aspects of colliding and radiating charm quark in an expanding quark-gluon plasma

Friday 8 April 2022 14:28 (4 minutes)

Heavy quarks, namely charm and bottom quarks, serve as efficient probes to characterize the properties of the quark-gluon plasma (QGP) created in the relativistic heavy-ion collisions. The QGP evolution is modeled using relativistic viscous 3+1 D hydrodynamics approach MUSIC, initialized with a central Pb-Pb collision event using IP-GLASMA. Measured observables associated with charm quark are explored within the Langevin approach by treating the charm quark transport coefficients as the input parameters for the LHC and RHIC energies. To that end, drag and diffusion coefficients due to the collisional (elastic scattering process with the medium constituents) and radiative processes (soft gluon emission) of charm quark in the expanding QGP medium are analyzed. The effects of viscous corrections to the transport coefficients and the gluon emission process of the charm quark on the nuclear suppression factor are also studied. This work is the first up-to-date calculation of heavy quark experimental signals using the latest developments in the relativistic hydrodynamical simulation of heavy-ion collisions that will have a significant role in understanding different observables with the RHIC and LHC data.

Authors: Dr KURIAN, Manu (Indian Institute of Technology Gandhinagar); Dr SINGH, Mayank (School of Physics and Astronomy, University of Minnesota); Dr CHANDRA, Vinod (Indian Institute of Technology Gandhinagar); Dr DAS, Santosh Kumar (School of Physical Science, Indian Institute of Technology Goa); Prof. GALE, Charles (McGill University); Prof. JEON, Sangyong (McGill University)

Presenter: Dr KURIAN, Manu (Indian Institute of Technology Gandhinagar)

Session Classification: Poster Session 3 T11_4

Track Classification: Heavy flavors, quarkonia, and strangeness production