

# Leptons from HF (Heavy-Flavor) decays : Measurements and Inferences towards small systems

Thursday 12 December 2024 14:40 (20 minutes)

The early universe was in a high temperature and high density environment for a very brief period after the Big Bang. In order to recreate this state of matter in the laboratory, mini bangs are created by colliding heavy ions at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory and subsequently at the Large Hadron Collider (LHC) at CERN. In this talk I shall be covering on the selected results from LHC and RHIC. I shall be covering spectra and correlations (flow) and also nuclear modification factor. I shall be discussing quarkonia flow. Due to the larger mass of the bottomonium states compared to the charmonium ones, the measurement of bottomonia production in proton-nucleus collisions allows a study of CNM effects in a different kinematic regime, therefore complementing the J/Psi studies[1]. For smaller systems like p+A and p+p we have less deeply bound bottomonia states and thus a comparatively larger chance to escape. This means that more states become measurable, which is a positive feature. On the other hand, it also means that the escape mechanism which underlies the anisotropic flow of bottomonia may become largely ineffective, in particular for the Upsilon(1S).

Accordingly, the measurement of a sizable flow for Upsilon(1S) in small systems[2] would probably hint at the importance of initial-state correlations. Our present understanding of sQGP as a very good liquid with astonishingly low viscosity will be discussed including the recent observations of QGP-like phenomena in small collision systems[3]. The understanding small systems hence becomes very important and such studies will be also stressed and discussed[4].

[1] D. Das and N. Dutta, Int. J. Mod. Phys. A 33, no. 16, 1850092 (2018)

[2] D. Das, Nucl. Phys. A 1007 (2021) 122132

[3] D. Das, IJMPA Vol. 36, No. 24, 2130014 (2021)

[4] D. Das, IJMPA Vol. 37, No. 23, 2230012 (2022)

## Details

“Discussed with Prof. Kabana for a fee waiver on the extended day”

## Is the speaker for that presentation defined?

No

## Name of experiment and experimental site

N/A

## Is this an abstract from experimental collaboration?

No

## Internet talk

Yes

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