

The 186th HENPIC seminar by Dr. Yapeng Zhang

Title: Hypernuclei collective flow and its implication on the in-medium hyperon-nucleon interaction

Abstract: Hyperon-nucleon (YN) interaction is fundamentally important for exploring the nature of strong interaction. Density dependent YN and YNN interaction are essential inputs for understanding the inner structure of neutron stars. Heavy-ion collision is a unique tool to create dense nuclear matter in the laboratory. Collective flow has been commonly used for studying the properties of matter created in high-energy heavy-ion collisions. Collective flow of hypernuclei, bound state of hyperon(s) and nucleons, may shed light on YN interaction in condensed nuclear medium with finite pressure.

In this talk, I will report hypernuclei (Λ^3 H) and (Λ^4)H reconstructions in $\sqrt{s_{NN}}=3$ GeV mid-central Au+Au collisions at RHIC. Then, the first observation of the hyper-nuclei (Λ^3)H and (Λ^4)H directed flow v_1 from 5–40% data sample will be presented. The directed flow of (Λ^3)H and (Λ^4)H are compared with those of the copiously produced particles such as p, Λ , d, t, ^3He and ^4He . It is observed that the slopes of v_1 at mid-rapidity for the hyper-nuclei (Λ^3)H and (Λ^4)H follow a baryon number scaling implying that coalescence process is a dominant mechanism for the hyper-nuclei production in these collisions. The hypernuclei collective flow and its implication on the in-medium YN interaction will be discussed.

Summary