

## The 125th HENPIC seminar by Dr. Jiaxing Zhao 赵佳星 (Tsinghua U.), Oct. 22, 2020, Thursday, 10:30 am (UTC+8)

Talk title: Heavy flavor hadrons in heavy-ion collisions

Speaker: Dr. Jiaxing Zhao (Tsinghua University)

Abstract: The property of running coupling constant makes the quark confined to hadrons in vacuum. A deconfined quark-gluon plasma(QGP) can be produced through the relativistic heavy-ion collisions. The formation of QGP has a profound influence on the production and structure of heavy flavor hadrons. In turn, heavy quarks or hadrons can be used to detect and study the hadronization mechanism of QGP and so on. First of all, we use two/ three-body Schroedinger equation and Dirac equation to study the static properties of heavy flavor hadron in vacuum and finite temperature. It is essential for studying the production and structure of these heavy flavor hadrons in the QGP. Then, we calculated the yield of multi-charmed baryons and fully-heavy tetraquark states in heavy-ion collisions via the coalescence model. We find that the yield of doubly charmed baryons and fully-heavy tetraquark states in heavy-ion collisions is much higher than that in p+p collisions, which provides an effective way to find these new particles in the experiments. In addition, we find that the internal structure of triply charmed baryon depends on the temperature and triply charmed baryon can be Borromean state and Efimov state. Finally, I will give two examples of using heavy flavor hadrons to probe the hadronization mechanism and rotational properties.

Self-introduction: Jiaxing Zhao obtained Ph.D. under the supervision of Prof. Pengfei Zhuang from Tsinghua University in 2020, and currently a post-doctoral at Tsinghua University. His research focuses on few-body bound state at the quark level, in particular, the heavy flavor hadrons structure and production in heavy-ion collisions.

**Presenter:** Dr ZHAO, Jiaxing (Tsinghua University)