

The 232th HENPIC seminar by Haolei Chen (陈浩磊) , Fudan University, Aug 21-2025, Thursday 10:30 am (Beijing time)

Title: The Connection Between Spin and the QCD Phase Transition

Abstract: In high-energy nuclear physics, large angular momentum can arise in non-central heavy-ion collisions, resulting in a rapidly rotating quark-gluon plasma (QGP). In recent years, the effects of rotation have attracted growing interest from both theoretical and experimental perspectives. In this talk, I will present recent progress on the QCD phase diagram under rotation, with a particular focus on its possible connection to spin phenomena in heavy-ion collisions. Although these two aspects have been extensively studied individually, their interrelation remains insufficiently explored. I will mainly discuss one specific possibility —the quark-antiquark spin correlations near the QCD critical end point (CEP) —and how such correlations may provide new insights into critical dynamics. I will also briefly touch on the role of polarized gluon fields under rotation, which is potentially related to this topic.

Brief introduction about the speaker: Hao-Lei Chen is currently a postdoctoral researcher in physics at Fudan University. He obtained his B.S. degree in 2015 from East China Normal University and his Ph.D. in 2020 from Fudan University. His research interests mainly focus on rotational effects on chiral symmetry breaking and confinement in QCD, and further, how these effects manifest in experimental observables such as spin polarization and spin alignment in heavy-ion collisions.

Summary

Presenter: Dr CHEN, Haolei (Fudan University)