The 224th HENPIC seminar by Kai Zhou (周凯)，CUHK-SZ (港中深)，Mar. 27-2025, Thursday, 2:00pm (Beijing time)

Title: Exploring QCD Matter in Extreme Conditions with Machine Learning

Abstract:

In recent years, machine learning has emerged as a powerful computational tool and novel problem-solving paradigm for physics, offering new avenues for studying strongly interacting QCD matter properties under extreme conditions. In this talk, I will try to provide an overview of the application of machine learning to theoretical studies in high energy nuclear physics, especially related to QCD matter under extreme conditions. Several related contexts, including heavy ion collisions, lattice field theory calculations, and neutron stars, will be covered. The talk will also provides a commonality overview from a methodological perspective, including inverse problem solving and generative model, from data-driven mapping learning to physics-aware designing.

About the speaker:

Prof. Kai Zhou obtained his B.Sc. from Xi'an Jiaotong University (2009) and Ph.D. from Tsinghua University (2014). He then served as a postdoc at Goethe University Frankfurt's ITP in Germany (2014-2017). Later on, he became a Research Fellow and group leader of "Deep thinkers" in AI for science at FIAS, focusing on high energy nuclear physics related studies (W1 in 2017, W2 from 2022). Since late 2023, Kai has been an Assistant Prof. at CUHK-SZ (港中深).

Summary

Presenter: Prof. ZHOU, Kai (CUKH-SZ)