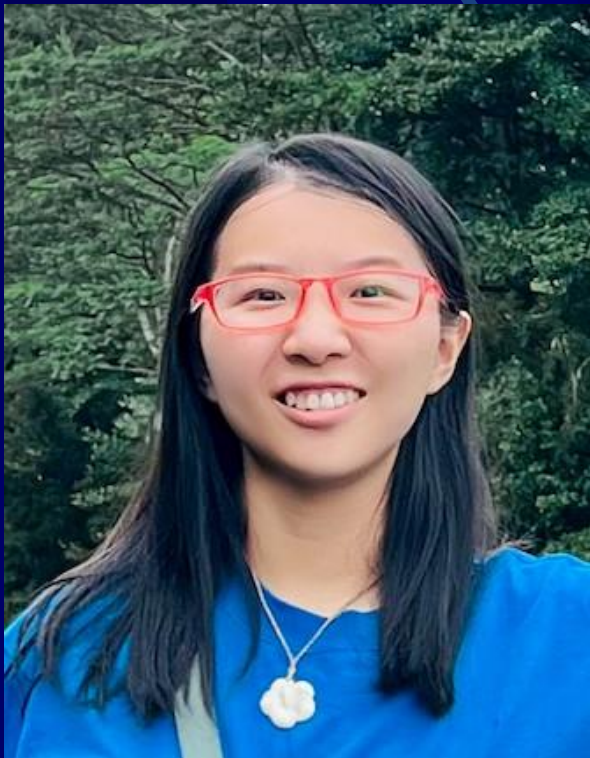




核科学与技术学院

School of Nuclear Science and Technology, UCAS

中国科学院大学高能核物理课题组前沿讲座



Title: First measurement of J/ψ and proton femtoscopy in pp collisions at ALICE

Speaker: Dr. Yuanjing Ji (纪媛婧)

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Time: 13:00pm, Dec. 31th, 2025

Place: Room 373, Lyceum-3, Yanqi lake Campus

Zoom Meeting link:

<https://cern.zoom.us/j/66665169836>

Abstract: The investigation of interaction between the J/ψ and nucleon (J/ψ -N) provides valuable insights into the gluon structure inside the nucleon, as the interaction is dominantly through multiple-gluon exchanges at low energies. Theoretical predictions for the J/ψ -N scattering length differ by several orders of magnitude, ranging from $\sim 2 \times 10^{-4}$ to ~ 0.5 fm. The study of the $c \bar{c}$ -N interaction is also essential for understanding the nature of the hidden-charm pentaquark states (P_c), which has been observed in the J/ψ -p invariant mass spectrum. In hadronic collisions, one way to access the J/ψ -proton interaction is through femtoscopy techniques. Such measurements, nevertheless, have not been performed so far due to the limitations in experimental statistics and particle identification capabilities. In this talk, we will discuss the first experimental measurement on J/ψ -p femtoscopic correlation function in pp collisions at $\sqrt{s} = 13.6$ TeV. The J/ψ are reconstructed via the $J/\psi \rightarrow e^+e^-$ channel at midrapidity utilizing the high-statistics data collected during LHC Run 3 by the ALICE experiment. Outlooks on the measurements of charm hadron and nucleon interactions in ALICE 2 and ALICE 3 will also be discussed.