

The 160 HENPIC seminar by Dr. Xinye Peng (彭忻烨), China University of Geosciences (中国地质大学), March 10, 2022, Thursday 10:30 (Beijing time)

TITLE: Recent open heavy-flavour results with ALICE at the LHC

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Abstract:

In the ultra-relativistic heavy-ion collisions at the Large Hadron Collider (LHC), a state of color-deconfined matter, called quark-gluon plasma (QGP), is created. Heavy quarks are produced in the early stage of the collisions, they suffered the entire evolution of the medium, hence they are the effective probes of the medium properties. Models describing the heavy-flavour transport in an hydrodynamically expanding medium require also a precise modelling of the heavy-quark hadronisation mechanisms in the QGP medium. Experimentally, this information is provided via measuring ratios between different hadron species. Besides, the charmed baryon-to-meson ratios are sensitive tools to investigate charm hadronisation mechanisms in small systems, exploring if charmed hadron formation in hadronic collisions differs from the element (e.g., ee and ep) collisions.

In this talk, systematic measurements of charm meson and baryon production with ALICE will be presented, focusing on understanding the charmed baryon-to-meson enhancement in small systems. Measurements on the production and elliptic flow of charm and beauty hadrons in heavy-ion collisions will be discussed as well. Such studies will help to reveal heavy quark energy loss and diffusion properties in the QGP medium.

Refs: JHEP05 (2021) 220; PRL 127 (2021) 20, 202301; arXiv: 2111.11948; JHEP10 (2021) 159; PRD 105, L011103; arXiv: 2110.09420; arXiv: 2110.10006; arXiv:2112.08156; arXiv:2202.00815; PRL 126 (2021) 162001

About the speaker: Xinye Peng received his joint Ph.D. degree at Central China Normal University (CCNU) and Padova University in 2019, and worked as a postdoc at CCNU, he is currently an associate professor at China University of Geosciences (Wuhan). His research focuses on charm and beauty production and collective flow in the ALICE experiment, he serves as ALICE fully reconstructed charm hadron decays (D2H) analysis group coordinator now.