

The 136th HENPIC seminar by Dr. Wei Chen 陈蔚 (University of Chinese Academy of Sciences), Mar. 24, 2021, Wednesday, 10:30 (UTC+8)

Talk title: Search for the elusive jet-induced diffusion wake with 2D jet tomography

Speaker: Dr. Wei Chen, University of Chinese Academy of Sciences

Abstract:

Diffusion wake is an unambiguous part of the jet-induced medium response in high-energy heavy ion collisions that leads to a depletion of soft hadrons in the opposite direction of the jet propagation. In this talk, new experimental data on Z-hadron correlation in Pb+Pb collisions at the Large Hadron Collider show, however, an enhancement of soft hadrons in the direction of both the Z and the jet. We use a coupled linear Boltzmann transport and hydro model to demonstrate that medium modification of partons from the initial multiple parton interaction (MPI) gives rise to a soft hadron enhancement that is uniform in azimuthal angle while jet-induced medium response and soft gluon radiation dominate the enhancement in the jet direction. After subtraction of the contributions from MPI with a mixed-event procedure, the diffusion wake becomes visible in the near-side Z-hadron correlation. We further employ the longitudinal and transverse gradient jet tomography for the first time to localize the initial jet production positions in Z/ γ -jet events in which the effect of the diffusion wake is apparent in Z/ γ -hadron correlation even without the subtraction of MPI.

Self-introduction:

Wei Chen was a PhD student in CCNU supervised by Prof. Xin-Nian Wang. He is currently in University of Chinese Academy of Sciences in collaboration with Prof. Mei Huang as a postdoc. His research is mainly to study jet-medium interaction, including jet-induced medium excitation in heavy-ion collisions with phenomenological model.

Presenter: Dr CHEN, Wei