Contribution ID: **121** Type: **Poster**

Jet-induced hydro response estimation with Flow-model based Generative neural network in heavy-ion collisions

Tuesday 24 September 2024 18:10 (20 minutes)

In high-energy heavy-ion collisions, jets traverse the quark-gluon plasma (QGP) and deposit energy into the medium, leading to jet-induced medium response. The medium response takes the form of Mach-cone-like excitations and can modify the internal structure of the jet, affecting many observables, such as jet shape and jet fragmentation function and so on. However, simulating jet-induced medium response requires not only a complete model that can accurately describe the evolution of hard and soft partons concurrently but also substantial computational resources for full-scale simulations. In this study, we trained a generative neural network using a flow model with gamma-jet events from 0-10% centrality Pb+Pb collisions at 5.02 TeV to estimate the final state effects of jet-induced medium response. Our findings indicate that with only the initial jet information—namely, the energy-momentum of gamma and the jet, along with their initial positions—the network can accurately predict the positions of the Mach-cone's leading edge and maintain a particle spectrum within the same order of magnitude as the actual data.

Category

Theory

Collaboration

Author: WU, Kaiyi (CCNU)

Co-authors: PANG, LongGang (Central China Normal University); Dr WANG, Xin-Nian (Lawrence Berkeley National Lab. (US)); YANG, Zhong (CCNU)

Presenter: WU, Kaiyi (CCNU)

Session Classification: Poster Session

Track Classification: 1. Jets modification and medium response