
The 111th HENPIC seminar by Dr. Weiyao Ke (柯伟尧), UC Berkeley&Lawrence Berkeley National Laboratory, July 2nd, 2020, Thursday, 10:30 am (Beijing time)

Talk title: Jet properties in heavy-ion collisions from a transport model perspective

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Abstract:

Relativistic heavy-ion collisions produce hot and dense QCD medium. Jets, initiated by hard processes in these collisions, propagate through and interact with this color opaque medium. Studying the modifications to the properties of jets relative to those measured in proton-proton collisions helps to reveal the jet-medium interactions. In this work, we try to understand the medium modifications to jets in a linearized partonic transport model. The time-evolution of hard partons is coupled to a 2+1D viscous hydrodynamic modeling of the medium. The jet-medium interactions include both elastic collisions and medium induced radiations, as well as a simple model for jet induced medium excitations. We looked at high p_T inclusive hadron R_{AA} , jet R_{AA} , and jet shape modifications to understand the roles played by different mechanisms. We found that the suppression of the hardest constituents—leading particles—is largely due to medium-induced radiation process; while elastic collisions and medium excitations are essential to understand jet suppression and the energy redistribution at large- r . Finally, we discuss the implications of the constraining power of the jet transport parameters in the hot QCD medium using the transport model approach.

Profile:

Weiyao Ke (UCB & LBNL). Weiyao Ke is currently a postdoctoral researcher at the University of California, Berkeley, and Lawrence Berkeley National Laboratory. He received his Ph.D. in physics from Duke University in 2019. His primary research interests are the development and application of transport theory to heavy flavor and jet modifications in nuclear environments. Other interests include the application of the Bayesian inference technique to heavy-ion physics phenomenology.