Contribution ID: **84** Type: **not specified**

Nuclear modification of full jets and jet structure in PbPb collisions at the LHC

Thursday, 20 December 2018 15:00 (15 minutes)

With our coupled jet-fluid model [1, 2, 3], we study the nuclear modifications of full jets and jet structures for single inclusive jet, dijet and gamma-jet events in Pb+Pb collisions at both 2.76 TeV and 5.02 TeV. The evolution of full jet shower is studied via a set of coupled transport equations including the effects of collisional energy loss, transverse momentum broadening and medium-induced splitting process. The dynamical evolution of the bulk medium is simulated via hydrodynamic equation with source terms which describe the energy and momentum deposited from hard jet to soft medium. Our detailed analysis indicates that collisional absorption contributes most to full jet energy loss and tends to narrow the jet shape function, while transverse momentum kicks and medium-induced radiations contribute less energy loss and broaden the jet transverse profile. Also, jet-induced flow plays a significant contribution to jet shape function and dominates at large angles away from the jet axis. The final nuclear modification pattern for the jet shape function is a combined effect from various jet-medium interaction mechanisms. Our detailed studies for single inclusive jets, dijets and gamma-jets for various kinematics indicate that the nuclear modification of jet shape is sensitive to jet energy and collision energy, and not much sensitive to jet flavor.

Reference: [1] Ning-Bo Chang, Guang-You Qin, Phys.Rev,C94,024902 (2016) [2] Yasuki Tachibana, Ning-Bo Chang and Guang-You Qin, Phys.Rev,C95,044909 (2017) [3] Ning-Bo Chang, Guang-You Qin, Yasuki Tachibana, in preparation

Type

Parallel talk

Sessions (parallel only)

Heavy Ions

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Session Classification: Heavy Ion Physics

Track Classification: Heavy Ions