

Multiparticle system in high energy hadronic/nuclear collision and matter state of early universe

The universe is expanding, hence in early times it was more dense than it is today. The spacetime curvature becomes arbitrarily large around the singular point, leaving room for arbitrarily large energetic processes as well as arbitrarily dense matter states to take place. The matter states of the largest densities that human being can produce and study microscopically in laboratory are those generated in high energy collisions. The matter state appearing just after the inelastic hadronic/nuclear collisions is taken as the dominant matter-energy content of the universe. Working on the central rapidity plateau, a nonsingular and anisotropic toy-model presenting an inflationary phase that naturally evolves to a decelerated expansion can be obtained. Moreover, by considering the specific state of the glasma fluid at small time scales, a solution describing the evolution of the spacetime is presented. These simple examples of the collider physics motivated cosmology show that the multiparticle system produced in collision can shed light on the matter state of early universe.

Authors: Prof. KLIPPERT, R. (UNIFEI); Prof. LI, Shi-Yuan (SDU); Prof. DE LORENCI, V. A. (UNIFEI)

Presenter: Prof. LI, Shi-Yuan (SDU)

Track Classification: Pre-equilibrium and initial state physics