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Effective kinetic description of the early-time dynamics in heavy-ion collisions

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In the idealized high-energy limit of heavy-ion collisions, the system right after collisions is described as an over-occupied gluonic plasma expanding in the longitudinal direction, which is called Glasma. The understanding of the quark dynamics in such a pre-equilibrium state is of prime importance as it has a direct connection to electromagnetic probes such as photons. We report on a numerical study of the Boltzmann equation including two-to-two scatterings of gluons and quarks in a Glasma [1]. We find that quark distributions show self-similar scaling behavior like those of gluons. We also discuss the role of number-changing inelastic scatterings in the time evolution toward chemical equilibration between quarks and gluons.

[1] N. Tanji and R. Venugopalan, arXiv:1703.01372.

Experimental Collaboration

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