

Quark and Gluon Production from an Expanding Strong Color Electric Flux Tube

We study quark and gluon production from an expanding strong color electric flux tube. Firstly, we derive a set of linear equations for quantum fluctuations by employing a mean-field approximation on top of the strong color electric flux tube, which describes the particle production and its backreaction on the flux tube. Second, we carry out numerical simulations and discuss how the flux tube decay through the quark and gluon production to form a quark-gluon plasma. In particular, we discuss the time evolution of (i) the phase space density of produced particles; (ii) the energy balance between the produced particles and the color flux tube; and (iii) the transverse and longitudinal pressure of the system, i.e., the degree of isotropization of the system.

Preferred Track

Initial State Physics and Approach to Equilibrium

Collaboration

Not applicable

Primary author: TAYA, Hidetoshi (The University of Tokyo)

Presenter: TAYA, Hidetoshi (The University of Tokyo)

Session Classification: Poster Session