Contribution ID: **48** Type: **not specified**

Early Stages of Relativistic Heavy Ion Collisions: Coupling Relativistic Transport Theory to Decaying Color-Electric Flux Tubes

Wednesday, 17 February 2016 11:15 (25 minutes)

We model early times dynamics of relativistic heavy ion collisions by an initial color electric field which decays to a plasma by the Schwinger mechanism. The dynamical evolution of the color field is coupled to the dynamics of the many particles system produced by the decay, which is described by relativistic kinetic theory at fixed viscosity to entropy density ratio η/s. The backreaction of the plasma on the color field is taken into account by solving self-consistently the kinetic and the field equations. We study isotropization and thermalization of the system produced by the field decay for a static box and for a 1+1D expanding geometry. We find that, regardless of the viscosity of the
produced plasma, the initial color electric field decays within 1 fm/c; however, in the case η/s is large, oscillations of the field are effective along the entire time evolution of the system, affecting
the late times evolution of the ratio between longitudinal and transverse pressure. We have also investigated the effect of turning from the relaxation time approximation to the Chapman-Enskog one, finding that this improvement affects mainly the early times evolution of the physical quantities.

Primary author: Mrs OLIVA, Lucia (INFN-LNS, University of Catania)

Co-authors: Mr PUGLISI, Armando (University of Catania, INFN-LNS); Dr SCARDINA, Francesco (University of Catania, INFN-LNS); Dr RUGGIERI, Marco (University of Catania); Dr PLUMARI, Salvatore (University of Catania, INFN-LNS); Prof. GRECO, Vincenzo (University of Catania, INFN-LNS)

Presenter: Mrs OLIVA, Lucia (INFN-LNS, University of Catania)

Session Classification: Talks