ID de Contribution: **87**

Type: **Flash Talk (Plenary) + Poster**

Gluon matter under weak acceleration: lattice results

lundi 22 juillet 2024 18:05 (5 minutes)

When two relativistic heavy nuclei collide, they produce strong chromoelectric fields that lead to a rapid deceleration of the colliding nuclei. It was suggested twenty years ago that the deceleration leads to a rapid thermalization of the gluon matter through the Hawking-Unruh effect that produces a final thermal gluon state via quantum tunneling through the emerging event horizon. In the Color Glass Condensate picture, the deceleration in the relativistic heavy-ion collisions has been estimated to reach an enormous value of $a \simeq 1$ GeV. Around the same time, it was also demonstrated in a Nambu-Jona-Lasinio approach that the acceleration produces a phase transition to a chirally restored phase. In our work, we study the non-perturbative properties of gluon plasma subjected to weak acceleration using first-principle numerical Monte Carlo simulations. Under acceleration, the gluon plasma resides in local thermal equilibrium. We use the Luttinger (Tolman-Ehrenfest) correspondence between temperature gradient and gravitational field to impose acceleration in imaginary time formalism, which can be performed with the real-valued acceleration. We show that even the weakest acceleration of the order of $a \sim 25$ MeV drastically softens the deconfinement phase transition, converting the first-order phase transition of a static system to a very soft crossover. On the other hand, we found that the weak acceleration of gluon plasma does not affect the critical temperature of the deconfinement transition.

Auteur principal: Dr CHERNODUB, Maxim (CNRS, Université de Tours, France)

Co-auteurs: POCHINOK, A. S.; Prof. MOLOCHKOV, Alexander (Beijing Institute of Mathematical Sciences and Applications); STEPANOV, D. V.; GOY, V.A.

Orateur: Dr CHERNODUB, Maxim (CNRS, Université de Tours, France)

Classification de Session: Flash talk and posters