

Lattice study of the thermal phase transitions in rotating QCD with dynamical quarks

Monday, 27 February 2023 17:10 (20 minutes)

Relativistic rotation causes a change of QCD critical temperatures. Various phenomenological and effective models predict a decrease of the critical temperatures in rotating QCD. Nevertheless, lattice simulations showed that the critical temperature in gluodynamics increases due to rotation. We extend the lattice study to the theory with dynamical fermions. In this report we present the first lattice results for rotating QCD with $N_f=2$ dynamical clover-improved Wilson quarks. We also study separately the effect of rotation on gluonic and fermionic degrees of freedom. It is shown that separate rotations of gluons and fermions have opposite effects on the critical temperatures. In aggregate, the pseudo-critical temperatures in QCD increase with angular velocity. Dependence of the results on the pion mass is also discussed.

Primary authors: BRAGUTA, Victor (BLTP JINR); KOTOV, Andrey; Dr ROENKO, Artem (JINR, BLTP); SYCHEV, Dmitrii (BLTP JINR, MIPT)

Presenter: Dr ROENKO, Artem (JINR, BLTP)