



Объединенный институт ядерных исследований
ЛАБОРАТОРИЯ ТЕОРЕТИЧЕСКОЙ ФИЗИКИ
им. Н. Н. Боголюбова

Семинар
"ТЕОРИЯ АДРОННОГО ВЕЩЕСТВА ПРИ ЭКСТРЕМАЛЬНЫХ УСЛОВИЯХ"

Руководители: Э.-М. Илгенфритц и О. В. Теряев

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Mridupawan Deka
(BLTP JINR)

Meta-stable States in the Quark-Gluon Plasma

In pure $SU(3)$ gluodynamics, the deconfined phase exists in three degenerate states which are related to each other via $Z(3)$ rotations. For QCD with dynamical fermions, the $Z(3)$ symmetry is explicitly broken. As a consequence, the degeneracy between the three states is lifted, and one of these states becomes the lowest-lying phase. For asymptotically high temperatures one expects that the effects of quarks can at most render the other two phases meta-stable. In this project (Phys.Rev. D85 (2012) 114505) we have studied the meta-stable phases at high temperature by means of lattice QCD. We have considered $N_f = 2$ and 3 flavours of dynamical staggered quarks, and have carried out simulations at various values of the inverse gauge coupling β to observe these states. We have estimated the temperature above which the expected meta-stability appears.

Секретарь семинара: Я.Н. Клопот (klopot@theor.jinr.ru)