



Contribution ID: 50

Type: **not specified**

The Critical Line of the QCD phase diagram from Lattice QCD

Thursday, 19 May 2016 17:30 (20 minutes)

The phase diagram of QCD at finite density can be studied both experimentally and by theoretical means. While, from the experimental point of view, it is possible to obtain information from heavy ion collision experiments, from the theoretical point of view the only possible first-principle approach are Lattice QCD Montecarlo simulations. Unfortunately, at nonzero baryon density current algorithms are affected by a sign problem.

Nonetheless, in the regime where the baryon chemical potential μ_B is sufficiently small, it is possible to make predictions for the dependence of the critical temperature T_c on μ_B , that is the so-called “critical line” of QCD. I will discuss our latest results in this regard and compare them with the literature.

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Session Classification: Parallel Session 19 pm 2