Contribution ID : **51** Type : **not specified**

# Lattice simulations of the QCD chiral transition at real baryon density

*пятница, 12 ноября 2021 г. 15:30 (30)*

State-of-the-art lattice QCD studies of hot and dense strongly interacting matter currently rely on extrapolation from zero or imaginary chemical potentials. The ill-posedness of numerical analytic continuation puts severe limitations on the reliability of such methods. We performed simulations of the QCD chiral transition at finite real baryon density with the more direct sign reweighting approach. The method does not require analytic continuation and avoids the overlap problem associated with generic reweighting schemes, so has only statistical but no uncontrolled systematic uncertainties for a fixed lattice setup. This opens up a new window to study hot and dense strongly interacting matter from first principles. We performed simulations up to a baryochemical potential-temperature ratio of $\mu_B/T = 2.7$, covering most of the RHIC Beam Energy Scan range in the chemical potential. I will also clarify the connection of the approach to the more traditional phase reweighting method. Based on 2108.09213 [hep-lat]

**Primary author(s) :** BORSANYI, Szabolcs (University of Wuppertal); FODOR, Zoltan (University of Wuppertal); GIORDANO, Matteo (Eotvos University, Budapest); KATZ, Sandor (Eotvos University, Budapest); NOGRADI, Daniel (Eotvos University, Budapest); PASZTOR, Attila (Eotvos University, Budapest); WONG, Chik Him (University of Wuppertal)

**Presenter(s) :** PASZTOR, Attila (Eotvos University, Budapest)

**Session Classification :** Evening session 10

**Track Classification :** Quark-Gluon Matter at Finite Densities and Temperatures