Quark number and charge fluctuations in finite temperature QCD

Presenter: Frithjof Karsch
F. Karsch, S. Ejiri and K. Redlich

Abstract: Lattice calculations at non-vanishing chemical potential performed in the framework of a Taylor expansion around vanishing $\mu_{u,d}$ also provide information on fluctuations of conserved quantum numbers at vanishing and small values of the chemical potential, i.e. in a regime relevant for physics studied at the RHIC and in future also at the LHC.

We will discuss recent results on higher moments of density and charge fluctuations that can be deduced from our Taylor expansion studies of QCD thermodynamics at finite density. We will compare results with hadron resonance gas models at low temperature, an ideal quark gas at high temperature as well as universal properties in the vicinity of the transition expected for a second order transition with underlying O(N) symmetry.