

Title: Conservation laws in net-particle fluctuation measurements and their effect on LQCD predictions of the QCD phase transition

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Over the past decade, there has been a focus on event-by-event measurements of fluctuations of particle-identified multiplicity distributions by experimental relativistic heavy ion programs to confirm lattice QCD (LQCD) and model predictions of the phase transition of QCD. The focus of the experimental programs at GSI and RHIC is to establish a critical point on the QCD phase diagram, while at the LHC and RHIC (at the highest collision energies), and away from the critical point, high precision measurements of statistical multiplicity fluctuations aim to investigate processes of hadronization and chemical freeze-out in the QCD crossover region as a function of quark flavor and baryon number. This talk will place emphasis on the latter—describing recent results on strangeness and baryon number conservation in net-particle fluctuation measurements and its effect on the corresponding QCD susceptibilities used to map the QCD phase transition.