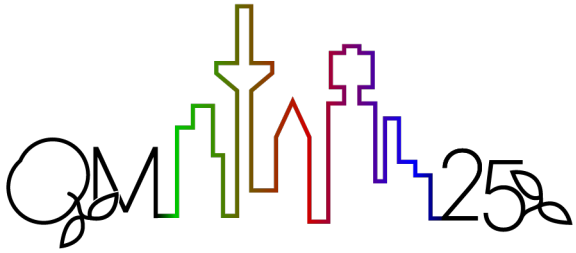

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Baryon fluctuations and ratios of light nuclei at a high-density phase transition

Light nuclei production is expected to be sensitive to a QCD phase transition at large net-baryon densities which are accessible in heavy-ion collisions. I will present results of a study with the UrQMD transport model supplied with a density dependent equation of state including a first-order phase transition. These results include the time evolution of the cumulants up to third order of the baryon number, proton number, and light nuclei number at $E_{\rm lab} = 2 - 3A$ GeV. While a significant deviation from Gaussian fluctuations of the baryon number is observed in coordinate space, no significant measurable signal is seen in a finite rapidity window. Relative to the baryon number fluctuations, the proton number fluctuations are always suppressed as they constitute only a small fraction of the total baryon number during the dense phase of the collision. In addition, the coordinate space fluctuations and strong correlations lead to an enhancement of cluster production for a phase transition compared to a crossover scenario. This enhancement, however, is small and limited to the dense stage of the collision before the system actually freezes out.

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Category

Theory

Collaboration (if applicable)

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