XXIV QUARK MATTER DARMSTADT 2014

Contribution ID: **622** Type: **Poster**

Experimental signals of the QCD first-order phase transition from a stochastic fluid dynamical model

Tuesday 20 May 2014 16:30 (2 hours)

A potential discovery of the first-order phase transition, which is conjectured in the QCD phase diagram at high net-baryon densities, would undoubtedly demand the existence of a critical point. We present results from a fluid dynamical model of the QCD phase transition in heavy ion collisions. Non-equilibrium effects in the evolution of the fluctuations of the order parameters are included via a stochastic propagation according to a Langevin equation. We observe the formation of a supercooled phase at the first-order phase transition and its subsequent fragmentation into domains in the order parameters and droplets in the baryon density. Potential experimental signals, such as an enhancement of higher harmonic flow coefficients, are discussed. Here, the correct treatment of the hadronic phase turns out to be crucial for the development and survival of experimental consequences of the first-order phase transition. Due to critical slowing down, which limits the growth of critical fluctuations in the vicinity of the critical point, we expect that the discovery of the first-order phase transition might experimentally be more feasible.

Authors: Dr HEROLD, Christoph; Dr NAHRGANG, Marlene

Co-authors: Prof. MISHUSTIN, Igor (Frankfurt Institute for Advanced Studies); BLEICHER, Marcus (Uni Frankfurt); YAN, Yupeng (Suranaree University of Technology)

Presenter: Dr HEROLD, Christoph

Session Classification: Poster session

Track Classification: QCD at High Temperature and/or Density