



Contribution ID: 201

Type: **Contributed talk**

## **Influence of conservation laws on higher moments of the net proton and net charge distribution**

*Monday, 28 September 2015 15:50 (20 minutes)*

The higher moments of the net baryon and net charge distributions, e.g. the skewness and kurtosis, are studied within an infinite hadronic matter calculation in a transport approach. By dividing the box into several parts, the volume dependence of the fluctuations is investigated. After confirming that the initial distributions follow the expectations from a Poisson distribution, the influence of quantum number conservation like the net baryon number and the net charge in the system on the higher moments is evaluated. For this purpose, the composition of the hadron gas is adjusted for different scenarios, only baryons are simulated to study the net baryon conservation or only pions and  $\rho$  mesons to investigate the charge conservation effect. In addition, the effect of imposing kinematic cuts in momentum space is analysed. The role of resonance excitations and decays on the higher moments can also be studied within this model. This work is highly relevant to understand the experimental measurements of higher moments obtained in the RHIC beam energy scan and their comparison to lattice results and other theoretical calculations assuming infinite matter.

**Primary author:** PETERSEN, Hannah

**Co-authors:** Dr STEINHEIMER, Jan; BLEICHER, Marcus (Uni Frankfurt)

**Presenter:** PETERSEN, Hannah

**Session Classification:** Correlations and Fluctuations I

**Track Classification:** Correlations and Fluctuations