Strangeness in Quark Matter 2016



Contribution ID: 102

Type: Contributed Talk

## The physics mechanism of light and heavy flavor $v_n$ and mass ordering in AMPT

Thursday 30 June 2016 10:00 (20 minutes)

A Multi-Phase Transport (AMPT) model has been shown to describe experimental data well, such as the bulk properties of particle spectra and azimuthal anisotropies  $(v_n)$  in heavy ion collisions [1]. Recent studies show that AMPT describes the  $v_n$  data in small system collisions as well [2]. We follow the parton cascading history in AMPT and find that the opacity in AMPT is relatively small and the parton  $v_n$  is primarily produced by the anisotropic escape mechanism [3]. We further investigate the origin of the mass ordering of hadron  $v_n$ in heavy ion as well as small system collisions at both RHIC and LHC. We find that the mass ordering is primarily due to hadronic rescattering processes, although the overall  $v_n$  development in the hadronic stage is small [4]. No qualitative difference is found between heavy ion collisions and small system collisions.

We have now extended these studies into the charm sector. We investigate the production mechanism of charm flow. We also study the mass ordering of  $v_n$  by comparing charm to light and strange particles. We discuss the implications of our results in terms of the hydrodynamic paradigm of azimuthal anisotropies in relativistic nuclear collisions.

[1] Z.-W. Lin, Phys. Rev. C 90 (2014) 014904

[2] A. Bzdak, G.-L. Ma, Phys. Rev. Lett. 113 (2014) 252301

[3] L. He, T. Edmonds, Z.-W. Lin, F. Liu, D. Molnar, and F. Wang, Phys. Lett. B753, 506(2016)

[4] H.L. Li, L. He, Z.-W. Lin, D. Molnar, F. Wang and Wei Xie (2016), arXiv:1601.05390

## On behalf of collaboration:

None

**Primary author:** LI, Hanlin (Purdue University, Wuhan University of Science and Technology) **Co-authors:** WANG, Fuqiang (Purdue University (US)); LIN, Zi-Wei (ECU)

Presenter: LI, Hanlin (Purdue University, Wuhan University of Science and Technology)

Session Classification: Flow