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

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Session Classification: Flow