The 22nd International Conference on
Strangeness in Quark Matter
22-27 March, 2026, Los Angeles, CA

Contribution ID: **23** Type: **Oral Presentation**

Baryon and electric charge stoppings in nuclear collisions and the role of strangeness

Tuesday, 24 March 2026 12:15 (20 minutes)

It has been challenging to quantitatively understand the stopping of incoming nucleons in nuclear collisions, and recently it has been proposed that comparing the baryon stopping with electric charge stopping can help address the question. In this study [1] we focus on the $B/Q \times Z/A$ ratio, which can strongly depend on rapidity although its value is one for the full phase space. We find that this ratio is very sensitive to the difference between strange and anti-strange rapidity distributions (the s−sbar asymmetry), and slightly more anti-strange quarks at mid-rapidity would lead to a ratio well below one. This is the case for Zr+Zr and Ru+Ru isobar collisions at 200A GeV from a multi-phase transport (AMPT) model. Without the s−sbar asymmetry, the AMPT model would give a mid-rapidity $B/Q \times Z/A$ ratio at or above one. In addition, the AMPT model gives $B/\Delta Q \times \Delta Z/A < 1$ at mid-rapidity for isobar collisions at all centralities, which strongly contradicts the recent data from the STAR Collaboration. We further find that the $B/\Delta Q \times \Delta Z/A$ ratio is very sensitive to the net-light quark (u,d) stoppings, but it is less sensitive to the s−sbar asymmetry than the $B/Q \times Z/A$ ratio by a factor of 3.

[1] M.A. Ross and Z.-W. Lin, arXiv:2510.22793.

Authors: LIN, Zi-Wei (East Carolina University); ROSS, Mason (East Carolina University)

Presenter: LIN, Zi-Wei (East Carolina University)

Session Classification: Parallel VI: Correlations