Abstract Submitted
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Balance Functions from Au+Au Collisions at $\sqrt{s_{\rm NN}}$ = 7.7 to 200 GeV GARY WESTFALL, Michigan State University, STAR COLLABORATION — We present balance functions from Au+Au collisions at $\sqrt{s_{\rm NN}}$ = 7.7 to 200 GeV measured at STAR and compare with recent results for Pb+Pb collisions at $\sqrt{s_{\rm NN}}$ = 2.76 TeV [1]. We find that the balance function narrows as the collisions become more central and as the incident energy increases, which is consistent with the concept of delayed hadronization of a deconfined quark-gluon plasma (QGP). We also present balance functions for $\pi^+\pi^-$ pairs, K^+K^- pairs, $p\bar{p}$ pairs, and pK^- pairs from central Au+Au collisions at $\sqrt{s_{\rm NN}}$ = 200 GeV. We compare to a model [2] that relates these balance functions to the correlations of up, down, and strange quarks in the QGP created in central Au+Au collisions at $\sqrt{s_{\rm NN}}$ = 200 GeV. Our results are consistent with two waves of charge creation in time, one early in the collision ($\sim$ 1 fm/c) and a second at hadronization ($\sim 5-10$ fm/c). We find that the densities of up, down, and strange quarks in the QGP extracted from the model comparison are consistent with current lattice gauge calculations.

[1] ALICE, Phys. Lett. B 723, 267 (2013).
[2] S. Pratt, Phys. Rev. Lett. 108, 212301 (2012); S. Pratt, Phys. Rev. C 85, 014904 (2012); S. Pratt, PoS(CPOD 2013)023.

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