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# Scaling properties of background- and chiral-magnetically-driven charge separation in Au+Au, Ru+Ru, and Zr+Zr collisions at $\sqrt{s_{NN}} = 200$ GeV

Tuesday 14 June 2022 14:00 (20 minutes)

The Anomalous Viscous Fluid Dynamics model, AVFD, is used in concert with the charge-sensitive correlator  $R_{\Psi_2}(\Delta S)$  to study the scaling properties of background- and chiral-magnetically-driven (CME) charge separation ( $\Delta S$ ), characterized by the inverse variance  $\sigma_{R_2}^{-2}$  of the  $R_{\Psi_2}(\Delta S)$  distribution, in Au+Au, Ru+Ru, and Zr+Zr collisions at  $\sqrt{s_{NN}} = 200$  GeV. The  $\sigma_{R_2}^{-2}$  values for the background are event-shape-independent but show a characteristic scaling pattern with the charged-particle multiplicity, indicating an essential constraint for discerning background from the signal and a robust estimate of the difference between the backgrounds in Ru+Ru and Zr+Zr collisions. By contrast, the  $\sigma_{R_2}^{-2}$  values for signal + background show scaling violations that characterize the CME-driven contributions. I will discuss these scaling patterns and their implication for the detection and characterization of the CME. Corrections to recent  $R_{\Psi_2}(\Delta S)$  measurements that account for the background difference in Ru+Ru and Zr+Zr collisions will also be presented and discussed.

## Present via

Offline

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