

Charge balance correlations and contributions to local parity violation observables

We study charged particle correlations in a thermal freeze-out model with local charge conservation. By comparison to STAR data we find that balancing charges are emitted from significantly smaller rapidity regions in central collisions compared to peripheral collisions. The results indicate that charge diffusion is small and the centrality dependence points to a change of the charge production mechanism. We also calculate the contributions from charge-balance correlations to STAR's local parity violation observable. We show how local charge conservation, when combined with elliptic flow, explains much of STAR's measurement. In addition we show how momentum conservation, when combined with elliptic flow, induces charged particle correlations contributing to the STAR measurement.

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