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Phenomenological study of hadron correlation and fluctuation in relativistic heavy ion collisions

We present recent results of the production correlation and fluctuation properties of identified baryons in quark combination model. The presentation is concentrated on three main aspects: (1) multiple correlations among the event-averaged yields of identified baryons and antibaryons; (2) rapidity correlations in production of identified baryons and antibaryons via a new correlation function differentiating from the usual charge balance function; (3) dynamical (event-by-event) correlation and fluctuations of the yields of identified baryons and antibaryons. By comparing the predictions with existing and/or future experimental data of AA collisions at LHC and RHIC, we discuss how to test the model itself and obtain deep insights into the correlation and fluctuation properties of quarks and antiquarks before hadronization in AA collisions.

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