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Modeling of charge particle correlations in nucleus-nucleus interactions at NICA and RHIC energies

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A model analysis of charge particle correlations in relativistic heavy-ion collisions was performed at energies that are planned to be available at NICA. The charge balance function (CBF) was chosen as a measure of charge correlations. The CBF represents conditional probability density of a charged particle to be observed at certain relative to its antiparticle rapidity and azimuthal angle given the antiparticle was observed elsewhere. The CBF widths are sensitive to charge separation duration in the system. It was shown that measured by STAR experiment at RHIC dependencies of CBF rapidity widths on centrality of Au+Au collisions at center-of-mass energies 7.7 and 11.5 GeV per nucleon pair can be reproduced with HYDJET++ model. In order to achieve adequate description of the experimental results an event-by-event charge conservation mechanism was introduced to the Monte-Carlo model HYDJET++, and finite values of isospin, strangeness and baryon chemical potentials were taken into account.

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