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Centrality determination in heavy-ion collisions at the NICA energy range.

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Centrality is a key parameter characterizing the geometry of relativistic heavy-ion collisions, defining the size of the interaction region and enabling comparisons with model predictions and other experimental results. The Glauber method, based on charged-particle multiplicity, is reliable at high energies but, at low energies with small multiplicities, exhibits uncertainties in impact parameter estimation. In this study, we investigate both the Glauber method and an alternative approach based on Bayes'theorem for centrality determination in collisions at the NICA energy range. The procedures were performed employing charged-particle multiplicity distributions generated by state-of-the-art models of nucleus–nucleus collisions.

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