

# Simulation of the momentum distributions of the spectator fragments in $^{124}\text{Xe}+\text{CsI}$ Collisions at the BM@N with accounting for pre-equilibrium clusterization

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Understanding the momentum distributions of the spectator fragments in relativistic nuclear collisions, such as those in the BM@N experiment (NICA), helps to estimate the acceptance of the zero-degree calorimeters and other forward detectors. BM@N is equipped with FHCAL and SciWall, which can detect spectator nucleons and at least some spectator fragments [1]. In order to simulate this response, one needs the model which provides realistic momentum distributions of the spectator fragments.

In this work we use the Abrasion-Ablation Monte Carlo for Colliders (AAMCC-MST) model [2] with and without MST clustering as the pre-equilibrium fragmentation model to simulate the production of spectator fragments [3]. The Goldhaber model [4] is used to account for the intranuclear motion of the removed nucleons. The momentum distributions of the spectator fragments were simulated and validated with data from the KLMM collaboration [5, 6]. Then, the momentum distributions of spectator neutrons, protons, hydrogen and helium fragments, light and heavy fragments in  $^{124}\text{Xe}+\text{CsI}$  collisions at BM@N were calculated for different centrality ranges. It was found that accounting for pre-equilibrium fragmentation increases the mean transverse momentum  $p_T$  of the spectator fragments and improves agreement with the experimental data.

## References

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