

Welcome to NICA days 2017 in Warsaw



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α clusters in ultra-relativistic light-ion + Pb collisions

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We explore possible observable signatures of α clustering of light nuclei in ultra-relativistic nuclear collisions involving ${}^7,9\text{Be}$, ${}^{12}\text{C}$, and ${}^{16}\text{O}$.

The clustering leads to specific spatial correlations of the nucleon distributions in the ground state, which are manifest in the earliest stage of the ultra-high energy reaction.

The formed initial state of the fireball is sensitive to these correlations, and the effect influences, after the collective evolution of the system, the hadron production in the final stage. Specifically, we study effects on the harmonic flow in collisions of light clustered nuclei with a heavy target (${}^{208}\text{Pb}$), showing that measures of the elliptic flow are sensitive to clusterization in ${}^7,9\text{Be}$, whereas triangular flow is sensitive to clusterization in ${}^{12}\text{C}$ and ${}^{16}\text{O}$.

Specific predictions are made for model collisions at the NICA energies.

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