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Kinematic approach for nuclei coalescence in transport models

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Transport approach [1,2] for nucleus-nucleus collisions description is widely used and underlies many popular Monte Carlo event generators, such as SMASH [3] and UrQMD [4]. Unfortunately, the mechanisms of nucleus fragmentation and coalescence are not taken into account by the transport approach based models. In final states, nucleus fragments (such as spectators or made by coalescence light nuclei) are presented as many individual protons and neutrons. It leads to significant overestimation of particle multiplicity in the regions of large pseudorapidity ($|\eta| > 3.5$) (Fig. 1).

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To solve this problem, the kinematic approach for nuclei coalescence was developed. The main idea of the approach is to interpret a bulk of nearly spaced nucleons with close velocities as a single nucleus. The predictions of the approach within the transport models are compared with non-transport models predictions and experimental data. The obtained results are discussed.

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