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## Nuclear coalescence, collective behaviour and emission volume in small interacting systems

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The production of light nuclei and antinuclei in particle collisions can be described as the coalescence of final state nucleons close in phase space. In heavy ion collisions, it is usually assumed that the formation probability is controlled by the size of the interaction region, while nucleon momentum correlations are either neglected or treated as a collective effect. Interestingly, recent experimental data on nucleus and hadron production in  $pp$  collisions at LHC shows evidence for such collective behaviour. This is in strong contradiction to the standard assumption that the coalescence probability in small interacting systems, such as  $e^+e^-$  or  $pp$  collisions, are controlled by their momentum distribution. In this talk, however, we argue that such data are naturally explained using QCD inspired event generators if both nucleon momentum correlations and the size of the emission volume of nucleons are considered. In order to consider both effects simultaneously, we employ a per-event coalescence model based on the Wigner function representation of the nucleus state. The model predicts the size and  $p_T$  dependence of the source volume measured at LHC, and it has therefore no free parameters. Finally, we comment on the validity of the underlying assumptions of the femtoscopy framework in small interacting systems and its relation to nuclear coalescence.

### In-person participation

Yes

**Primary authors:** KACHELRIESS, Michael (NTNU); OSTAPCHENKO, S.; TJEMSLAND, Jonas**Presenter:** TJEMSLAND, Jonas**Session Classification:** Poster Session**Track Classification:** Heavy Ions