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## **Midrapidity cluster formation within PHQMD approach**

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The clusters have been observed experimentally at midrapidity from SIS up to LHC energies. However, the understanding of the mechanisms for the production of weakly bound clusters in heavy-ion reactions is still one of the challenging puzzles nowadays, usually called “ice in a fire”. In the Parton-Hadron-Quantum-Molecular Dynamics (PHQMD) clusters are formed dynamically due to the interactions between baryons described on the basis of Quantum Molecular Dynamics which allows to propagate the n-body Wigner density and n-body correlations in phase-space, which is essential for the cluster formation. We report on new results and recent developments of the PHQMD transport approach.

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