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Advanced coalescence model based on the Wigner function formalism

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The production of deuterons in pp collisions at $\sqrt{s} = 13$ TeV is simulated on an event-by-event basis using a coalescence afterburner based on a state-of-the-art Wigner-function formalism, and EPOS 3 and PYTHIA 8.3 as event generators. The space-momentum correlations of the nucleon pairs provided by the event generators are preserved, while the nucleon-emitting source is modelled such to reproduce the m_T -dependence of the source size measured by ALICE. For the first time, the results of this model show that using a realistic wavefunction for deuterons, namely Argonne v_{18} , it is possible to reproduce the measured deuteron spectra with no free parameters.

Category

Experiment

Collaboration (if applicable)

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