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A realistic coalescence model for (anti)nuclei production

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Understanding the formation of (anti)nuclei in high-energy collisions has attracted large interest over the last few years. According to the coalescence model, nucleons form independently and then bind together if they are close in phase-space. A recent advancement of the model is the Wigner function formalism, which allows the calculation of the coalescence probability based on the distance and relative momentum of the constituent nucleons. The interest in explaining nuclear formation processes extends beyond standard model physics, with implications for indirect Dark Matter searches where antinuclei could be produced in their decays. In this presentation, we provide an improved model based on the state-of-the-art coalescence formalism, not only for deuterons but also for the more intricate case of A=3 nuclei. Our approach introduces a purpose-built Monte Carlo generator that offers high adaptability and superior performance compared to traditional general-purpose event generators.

Alternate track

1. Strong Interactions and Hadron Physics

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Yes

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