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Light (anti-)cluster production from nonlocal many-body scatterings in high-energy nuclear collisions

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Understanding light (anti-)nuclei production mechanism is a long-standing challenge in heavy-ion physics. Besides its own importance, it can benefit the search of QCD critical point as well as the detection of dark matter in space. In this presentation, we present a unified description of the microscopic dynamics of light (anti-)nuclei production in high-energy nuclear collisions by solving the relativistic kinetic equations with their nonlocal collision integrals treated with a stochastic method. The stochastic method is benchmarked in a box calculation, in which the thermal limits are correctly reproduced. Besides, our kinetic approach describes well the production of light clusters in both pp and heavy-ion collisions. The application of using light nuclei production to probe QCD critical point is further discussed

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