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Hyperon-deuteron momentum correlation function including the effect of the deuteron breakup

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Momentum correlation functions measured in heavy-ion scattering experiments have attracted significant attention as a source of information on the interaction between hyperons and nucleons. The correlation functions between hyperons and deuteron have been analyzed using theoretical expressions that approximate the deuteron as a single particle. However, it is essential to treat the three-body dynamics, including the relative degrees of freedom of the deuteron, to obtain more accurate results. To this end, the three-body system of the hyperon and deuteron is described by the Faddeev equation, a wave function is constructed using its solution, and a correlation function that incorporates the three-body dynamics is evaluated. The effect of the deuteron breakup on the correlation function between the hyperon and deuteron is then discussed.

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