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Momentum Distribution of a Fragment and Nucleon Removal Cross Section in the Reaction of Halo Nuclei

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Abstract: Recently the research on the halo structure of drip-line nuclei has shown some interesting properties of the existence of one or more halo nucleons. In the framework of few-body Glauber model, the momentum distribution of a fragment and nucleon removal cross section in the reaction of halo nuclei is presented and extended to nuclei having more than one halo nucleons. The reaction mechanism is treated with and without taking account of the final-state interaction. The wave function of removal halo nucleons in the continuum state is modified by imposing an orthogonal condition to the bound state. An analytical expression of the longitudinal momentum distribution of the fragment is derived when the bound state wave function of halo nucleons is taken as a Gaussian-type function. This is useful in the further investigation on the structure of halo nuclei.

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