



Contribution ID: 40

Type: Poster

Role of nn and three-body interactions on the ground-state structure of ^{22}C halo system

In an effort to contribute towards a better understanding of the dynamics of three-body weakly-bound systems, we present an analysis of the effect of three-body and nucleon-nucleon interactions on the ground-state binding energy and wave function. It is found that for a deeper three-body interaction, the $^{22}\text{C} \rightarrow ^{20}\text{C} + n + n$ remains bound even when the neutron-neutron interaction is switched off, unlike what would be intuitively assumed. These results shed more light on the relevance of the three-body force in a three-body weakly-bound system. We believe this conclusion would be valid for other three-body weakly-bound neutron systems.

Notes

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