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Structural Analysis of ^{29}Ne through Nuclear Breakup Reaction at 240 MeV/u

Structural Analysis of ^{29}Ne through Nuclear Breakup Reaction at 240 MeV/u
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The ground state structure of ^{29}Ne [1,2,3] has been comprehensively examined by analyzing different observables of nuclear breakup, ^{12}C(^{29}Ne, ^{28}Ne+n)^{12}C, reaction at 240 MeV/u beam energy by employing the Glauber approach using the Abu-Ibrahim [4]. Here, we have considered all possible core-neutron spin coupling configurations and their appropriate admixture to represent the ground state of ^{29}Ne. It is found that both the reaction (σ_{-R}) as well as the one-neutron removal cross section (σ_{-1n}) are well explained by considering $[0_1^+ \otimes 2p_{3/2}]$ [3,5] as the core-neutron spin coupling configuration with $J^\pi = \frac{3}{2}^-$ for ^{29}Ne. However, the spectrum of inclusive longitudinal momentum distribution (LMD) of ^{28}Ne core residues is better described by considering the admixture of p and f states with 0.8 and 0.2 as the spectroscopic factors corresponding to $J^\pi = \frac{3}{2}^-$.
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Section

Nuclear physics (Section 1)

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