Type: Contributed Oral/Poster

Single-particle structure of ¹²Be studied in quasi-free (p,pn)-reactions

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The neutron-rich nucleus 12 Be has been studied in inverse kinematics at the R 3 B-LAND setup at GSI. In a kinematically complete measurement, proton-induced one-neutron knockout reactions at 400 MeV/nulceon are used to investigate single-particle properties.

The high neutron-to-proton asymmetry leads to the breakdown of the magic N=8 shell-closure in 12 Be. The valence-neutron pair configuration of the 12 Be ground-state is assumed to be a mixture of the $(1p_{1/2})^2$ occupation and the $(2s_{1/2})^2$ & $(1d_{5/2})^2$ intruder configuration above a 10 Be core.[1,2]

The bound and neutron-unbound states populated in the 11 Be reaction fragment are disentangled by analysing the γ -ray spectrum and the relative-energy spectrum, respectively.

All three partial cross sections are determined from quasi-free scattering and coherently analysed in eikonal reaction theory by C. A. Bertulani [3].

It is shown that the $(2s_{1/2})^2$ & $(1d_{5/2})^2$ intruder configuration is the dominant ground-state admixture in 12 Be.

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