

ISOBAR ANALOG STATES IN ^{12}B AND ^{12}N : SEARCH FOR STATES WITH ENHANCED RADII

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On base of Asymptotic normalization coefficients (ANC) analysis halo was observed for 2 states of ^{12}B : 2^- , 1.67 MeV and 1^- , 2.62 MeV [1]. Independently on base of ANC analysis of our experimental data [2, 3] on reaction $^{11}\text{B}(d,p)^{12}\text{B}$ at $E(d) = 21.5$ MeV [3] neutron halo existence was confirmed for these states. Some new results were obtained for higher excited states: halo-like states were observed for 0^+ , 2.72 MeV and 3^- , 3.39 MeV states [3]. It should be mentioned that the last one is unbound state, which is 19 keV above the neutron emission threshold and in both states last neutron has a non-zero orbital momentum.

Natural question arises – what can we expect in isobar-analogues 2^- and 1^- states in ^{12}N . To study them we propose to use MDM [4, 5]: this method can be applied to the reaction $(^3\text{He},t)$. Its first application made it possible to determine the proton halo in unbound state of ^{13}N [6]. We have studied existing literature data on $^{12}\text{C}(^3\text{He},t)^{12}\text{N}$ reaction. This data is incomplete and there is no possibility to make definite answer on question about halo in 2^- and 1^- states of ^{12}N . By this reason experiment was done by our group on $^{12}\text{C}(^3\text{He},t)^{12}\text{N}$ reaction at the end of 2018. The measurements were conducted at the University of Jyväskylä (Finland) using the K130 cyclotron at $E(^3\text{He}) = 40$ MeV. The 150 cm diameter Large Scattering Chamber was equipped with three ΔE - E detector telescopes, each containing two independent ΔE detectors and one common E detector. The differential cross sections of the $(^3\text{He},t)$ reaction on ^{12}C were measured in the angular range 8° – 70° c.m. Preliminary results for angular distributions are obtained. MDM analysis of preliminary $(^3\text{He},t)$ experimental data will be done soon.

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