STUDY OF HIGHLY EXCITED STATES OF ^{9}Li ISOTOPE IN PION ABSORPTION REACTION

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Search for the highly excited states of ^{9}Li was provided in ^{11}B(π^{-}, dt)*X* reaction. The measurements were carried out at low energy pion channel of LANL with two-arm multilayer semiconductor spectrometer [1].

The analysis of two-dimensional distributions (Dalitz' diagram) allowed to identify following reaction channels:

Quasi-particle pion absorption on the intra-nuclear cluster of ^{5}Li π^{-} + ^{5}Li → d + t, where the residual ^{6}He system is a "spectator"; thus, indications of the existence of the rare cluster structure in ^{11}B nuclei were found: (^{6}He + ^{5}Li).

The cascade process with the formation of ^{9}Li excited states, which break up with respect to t and ^{6}He

$$\pi^{-} + {}^{11}\mathrm{B} \rightarrow \mathrm{d} + {}^{9}\mathrm{Li}^{*} + \mathrm{n} \rightarrow \mathrm{d} + \mathrm{t} + {}^{6}\mathrm{He} + \mathrm{n};$$

two-particle channels π^{-} + ^{11}B → d + ^{9}Li* and the following ^{9}Li* decay.

In the Missing Mass spectrum of π^{-} + ^{11}B → d + ^{9}Li* two-particle channel reaction the highly excited ^{9}Li level was found for the first time. It was shown that this state breaks up with the triton emission, his resonance parameters are $E_x \approx 11$ MeV, $\Gamma \approx 1$ MeV.

1. M.G.Gornov *et al*. // Nucl. Inst. and Meth. in Phys.Res. A. 2000. V.446. P.461.