FIZIKA, 4 (1972) 193—194

^{6}Li (t, p) ^{8}Li REACTION AT LOW TRITON ENERGY

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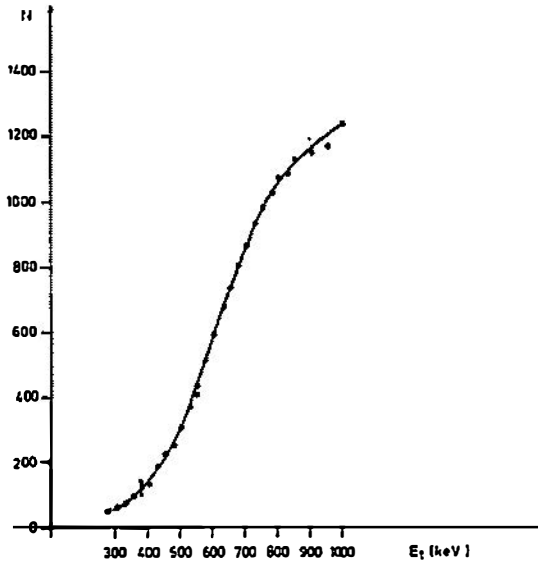
Received 20 April 1972

The excitation function of ^{6}Li (t, p) ^{8}Li reaction was measured in the region of incident triton energy from 275 to 1000 keV, which corresponds to the excitation of ^{9}Be from 17.87 to 18.35 MeV, where the previous data[1,2] on ^{9}Be are inadequate concerning specially the existance of ^{9}Be level at 18.1 MeV.

Thin ^{6}Li targets, evaporated on to 1.5 micron Al foil, were bombarded with the analyzed triton beam from Cockroft-Walton accelerator of the »Boris Kidrič« Institute. The excitation function of ^{6}Li (t, p) ^{8}Li reaction was obtained by determining the yield of alpha particles following $^8\mathrm{Li} \rightarrow {}^8\mathrm{Be}^*_{2.9} \rightarrow 2\,\alpha$ decay, which was analyzed after 10 s irradiations. Alpha particles were observed with a silicon detector and discriminated energetically before being registered by a TMC analyzer multiscaler unit.

It is seen from Fig. 1 that the excitation function of ^{6}Li (t, p) ^{8}Li reaction does not show resonant behaviour anywhere in the region from 275 to 1000 keV of triton energy. Therefore, the existence of ^{9}Be level at 18.1 MeV, which corresponds to 620 keV of triton energy in our experiment, is not confirmed.

Since only $L = 0$ and 1 are practically effective in the entrance channel of ^{6}Li (t, p) ^{8}Li reaction for studied energy region, our experimental result might be taken also as the evidence that 18.1 MeV level of ^{9}Be, if existing at all,



could not be assigned by J^{π} values $\frac{1^{\pm}}{2}, \frac{3^{\pm}}{2}$ and $\frac{5^{-}}{2}$ or it has to be wider than 500 keV. Excluding the last vague possibility, it seems considerably more probable to assume that ^{6}Li (t, p) ^{8}Li reaction proceeds via a direct mechanism.

References

1) P. Paul and D. Kohler, Phys. Rev. 129 (1963) 2698;
2) T. Lauritsen and F. Ajzenberg-Selove, Nucl. Phys. 78 (1966).