

# The search for antikaon nuclear bound states, recent results from FINUDA

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## Abstract:

Novel data from the  $K_{stop}^- A$  absorption reaction in light nuclei  ${}^6,7\text{Li}$ ,  ${}^9\text{Be}$  and  ${}^{12}\text{C}$  are presented. The data were collected by the FINUDA spectrometer running at the DAΦNE  $\phi$ -facility, Laboratori Nazionali di Frascati (LNF), Italy.

Data on reactions of  $K^-$  nuclear absorption with the emission of  $\Lambda$ -hyperon with nucleons are scarce. Therefore, further experimental studies are needed, which may clarify the mechanism of kaon absorption on multibarionic systems.

The present study aims at finding  $\Lambda p(d, t)$  correlations. Regardless of  $A$ , the  $\Lambda p(d, t)$  pairs are preferentially emitted in opposite directions. Moreover, the study concerns the distributions of the  $\Lambda p(d, t)$  invariant mass, which allows to determine the structure of bound  $[K^- NN(NNN, NNNN)]$  systems in nuclei. Such clusters are identified in the present measurement, and their masses (binding energies), decay widths and yields are reported.

The FINUDA results are compared with recent experimental and theoretical findings and the role of final state interactions of  $\Lambda$  and  $p(d, t)$  particles with the residual nucleus  $A'$  is discussed. The study trusted on the capability of FINUDA to reconstruct the tracks of all the particles involved in the above reactions.

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