

Low-energy kaon-nuclei interactions studies at DAFNE

Friday, 17 September 2021 10:10 (30 minutes)

The strong interaction theory in the low energy regime, is still missing fundamental experimental results in order to achieve a breakthrough in its understanding. Among these, the investigation of the low-energy kaon nucleon/nuclei processes and of the Kaonic atoms play a key-role. The talk will give an outline of the results obtained by the AMADEUS and SIDDHARTA experiments performed at the DAFNE Collider of LNF-INFN.

In the first part of the presentation the K- single and multi-nuclear absorptions on various light nuclear targets both at-rest and in-flight (for a kaon momenta up to 120 MeV/c) will be discussed with a focus on the nature of the $\Lambda(1405)$, the non-resonant hyperon pion formation amplitude below the K-N threshold and the yields and cross sections of K- single and multi-nucleon interactions.

The second part of the talk will be concerned on high sensitivity X-ray spectroscopic measurements of low-lying orbits transitions in kaonic atoms, which are presently being performed by the SIDDHARTA-2 experiment, with the main aim to perform the first ever measurement of kaonic deuterium.

I shall conclude with future plans on kaonic-nuclei interaction studies at DAFNE, beyond SIDDHARTA-2 measurement.

Summary

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