

Low-energy kaon-nuclei interaction studies at the DAFNE collider: a strangeness Odyssey

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The low-energy QCD, the theory within the Standard Model describing the strong interaction, is still missing fundamental experimental results to achieve a breakthrough in its understanding. Among these, the low-energy kaon-nucleon/nuclei interaction studies are playing a key-role.

Combining the excellent quality of the low-energy kaon beam delivered by the DAFNE collider of INFN-LNF with new experimental techniques, like high-precision spectroscopic Silicon Drift Detectors, we performed unprecedented measurements in the low-energy strangeness sector in the framework of the SIDDHARTA Collaboration and are presently running the SIDDHARTA-2 experiment for very challenging kaonic atoms measurements, such as kaonic deuterium first measurement.

I shall introduce the physics of kaonic atoms, the experiment, the first exciting results, and discuss future plans. I shall also present AMADEUS collaboration results on studies of low-energy kaons interacting with various nuclei.

The experiments at DAFNE represent a unique opportunity to unlock QCD secrets in the strangeness sector and contribute to better understand the role of strangeness in the Universe, from nuclei to the stars.

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