

# Kaonic atoms spectroscopy at DAFNE: overview and perspectives

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I shall present experiments devoted to the study of the kaonic atoms at the DAFNE Collider at the LNF-INFN, Frascati (Roma) laboratory. Combining the excellent quality kaon beam delivered by the DAFNE collider in Frascati (Italy) with new experimental techniques, as fast and very precise X ray detectors, like the Silicon Drift Detectors, we have already performed unprecedented measurements in the low-energy strangeness sector in the framework of the SIDDHARTA Collaboration. The kaonic atoms, as kaonic hydrogen and kaonic deuterium, provide the isospin dependent kaon-nucleon scattering lengths from the measurement of X rays emitted in the de-excitation process to the fundamental  $1s$  level of the initially excited formed atom. The most precise kaonic hydrogen measurement was performed by the SIDDHARTA collaboration, which realized, as well, the first exploratory measurement for kaonic deuterium ever. Presently, a major upgrade of the setup, SIDDHARTA-2 is being installed on DAFNE and is ready to measure kaonic deuterium in 2021. In the same time we propose future kaonic atoms measurements with various apparatuses, post-SIDDHARTA-2, which I am going to introduce and discuss. Kaonic atoms studies represent an opportunity to, finally, unlock the secrets of the QCD in the strangeness sector and understand the role of strangeness in the Universe, from nuclei to the stars.

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