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Kaon-nucleon/nuclei interaction studies by kaonic atoms measurements (the SIDDHARTA experiment at DAFNE)

The SIDDHARTA experiment (Silicon Drift Detector for Hadronic Atom Research by Timing Application) had the aim to perform a precise measurement of K-series kaonic hydrogen x-rays and the first-ever measurement of the kaonic deuterium x-rays to determine the strong-interaction energy-level shifts and widths of the lowest lying atomic states.

These measurements offer a unique possibility to precisely determine the isospin-dependent kaon nucleon(KN) scattering lengths which are directly connected with the physics of the KN interaction.

The experiment combined the excellent low-energy kaon beam generated at DAFNE, allowing to use gaseous targets, with excellent fast X-rays detectors: Silicon Drift Detectors. SIDDHARTA was installed on DAFNE in autumn 2008 and took data till late 2009.

Apart of the kaonic hydrogen and kaonic deuterium measurements, we have performed the kaonic helium transitions to the 2p level (L-lines) measurements: for the first time in a gaseous target for He4 and for the first time ever for KHe3.

In this talk, an overview of this experiment and recent results will be presented, together with future plans.

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