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KAONIC HELIUM³ and ⁴ MEASUREMENTS BY THE SIDDHARTA EXPERIMENT AT DAFNE

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The SDDHARTA experiment (Silicon Drift Detector for Hadronic Atom Research by Timing Application) has the aim to perform kaonic atoms X-ray transitions measurements, with the goal to better understand aspects of the low-energy QCD in the strangeness sector. 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. In the framework of SIDDHARTA we have performed the kaonic helium transitions to the 2 level (L-lines) measurements: for the first time in a gaseous target for helium⁴ and for the first time ever for kaonic helium³.

The interest for such type of measurement is rather high, being it motivated by two reasons: the so-called "kaonic helium puzzle" (even if this was solved by KEK-PS E570 experiment, but a cross-check was mandatory) and some theoretical predictions of possible high energy shift (at the level of 10 eV). In this presentation the results for the measurements to the 2p level (L-series) for kaonic helium⁴ and kaonic helium³ are presented.

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