

# Strangeness in Quark Matter 2019



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## **Kaonic atoms at DAFNE to access the strong interaction with strangeness at threshold**

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The X-ray measurements of kaonic atoms play an important role for understanding the low-energy QCD in the strangeness sector. The energy shift and broadening of the lowest-lying states of

such atoms, induced by the kaon-nucleus strong interaction, can be determined with high precision from atomic X-ray spectroscopy.

Significant achievements have been obtained by the SIDDHARTA experiment at the DAFNE electron-positron collider of LNF-INFN, among which: the most precise kaonic hydrogen measurement of the  $1s$  level shift and width to date, fundamental information for the low-energy  $K_p$  interaction in theoretical studies; an upper limit of the X-ray yield of kaonic deuterium, important information for future  $K_d$  experiments.

Using the experience gained with SIDDHARTA experiment, new X-ray studies focused on kaonic deuterium are in preparation in the framework of the SIDDHARTA-2 experiment, with the goal to determine the isospin dependent scattering lengths, which is only possible by combining the  $K_p$  and the upcoming  $K_d$  results. This experimental method provides unique information to understand the low energy kaon-nucleus interaction at threshold.

### **Collaboration name**

SIDDHARTA-2 Collaboration

### **Track**

Upgrades and new experiments

**Primary author:** SIRGHI, Diana Laura (INFN-LNF)

**Presenter:** SIRGHI, Diana Laura (INFN-LNF)

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