## Recent results and future plans for AMADEUS

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The scientific case of AMADEUS (Antikaon Matter At DA $\Phi$ NE: Experiments with Unravelling Spectroscopy) [1] deals with one of the most important, yet unsolved, problems in hadron physics: how the hadron masses and hadron interactions change in the nuclear medium.

The planned series of measurements with AMADEUS will provide a high precision data set to study antikaon nucleus/nucleon dynamics at low energy [2]. Moreover, AMADEUS will measure low-energy charged kaon cross sections on <sup>3</sup>He and <sup>4</sup>He and also resonance states like  $\Lambda(1405)$  or  $\Sigma(1385)$  [3].

To achieve these goals AMADEUS will make use of the KLOE detector system at LNF with a dedicated setup consisting of a cryogenic target system and an inner trigger and tracker device. The KLOE detector is indeed ideally suited for these measurements, first of all due to its large drift chamber with excellent charge particle identification and tracking capabilities, second due to an almost  $4\pi$  calorimeter device surrounding the drift chamber for the detection of neutral particles (photons and neutrons).

The R&D work for the AMADEUS setup has already started, a prototype of the trigger detector has been built and a prototype of the cryogenic target cell is under construction.

In parallel the analysis of the existing KLOE data to search for  $\Lambda$  - proton (deuteron) correlation as well as for  $\Lambda(1405)$  and  $\Sigma(1385)$  events, preformed by the AMADEUS analysis group, has lead to first important results.

The AMADEUS program and setup will be described and the results of the AMADEUS analysis group will be presented.

- [1] AMADEUS-LOI, http://www.lnf.infn.it or http://www.oeaw.ac.at/smi.
- [2] J. Zmeskal, Prog. Part. Nuclear Phys. 61 (2008) 512.
- [3] J. Zmeskal, et al., Nucl. Phys. A 835 (2010) 410.

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