Studies on the antikaon-nucleon interaction with the KLOE Drift Chamber.

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The Λ-proton, Λ-deuteron and Λ-triton correlations following K^- nuclear absorption in Helium and Carbon were investigated and the results will be presented. To this end old KLOE [1] data (from 2004-2005) was analyzed using the detector itself as an active target. Also results from a recent run (end of 2012) with a dedicated solid Carbon target will be presented.

The invariant masses and angular correlations will be compared with old bubble chamber and the most recent experiments (FINUDA, KEK, DISTO [2]) completing the picture of the investigations on the single and multi-nucleon absorption of low energy K^- in light nuclei.

The research here presented deals with one of the most interesting aspects of strangeness low energy QCD: how hadron masses and interactions change in the nuclear environment. The antikaon-nucleon potential is investigated searching for signals from bound kaonic clusters [3], systems where a kaon is attached inside a nucleus. The existence of such objects is very debated, and it would open the possibility for the formation of very dense baryonic matter and it would imply a deep attractive antikaon-nucleon potential.

The charged and neutral decay channels of the resonance Λ(1405) (which mass predictions [4] have received a boost since the publication of the kaonic hydrogen results by SIDDHARTA [5]) has been analyzed with the KLOE detector too.

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