$\Sigma^0 p$ and $\Lambda\pi^-$ correlations from kaonic absorptions in the KLOE drift chamber

O. Vazquez Doce[1]

[1]Excellence Cluster Universe - TUM

The hyperon-nucleon(s) and hyperon-pion correlations following K- nuclear absorption in Helium and Carbon were investigated with the KLOE drift chamber and the results will be presented. To this end, KLOE [1] data (from 2004-2005-2012) was analyzed using the detector itself as an active target.

The in-medium modification of hadron properties is the main field of study for the strangeness sector in the non-perturbative regime of the low energy region of QCD. The behaviour of strange hadrons at extreme densities are of capital importance for the description of the nuclear equation of state and the evaluation of the strangeness component in the core of the neutron stars.

The analysis of the $\Lambda(\Sigma^0)\pi$ channel, from which the measurement of the module of the isospin 1, S-wave non resonant transition amplitude are extracted for the first time, will be presented.

Final results from the search for signals of kaonic clusters (K-pp) in the $\Sigma^0 p$ channel will be presented as well. The existence of such objects has been very debated from its first prediction [3], and it would open the possibility for the formation of very dense baryonic matter and it would imply a deep attractive value for the antikaon-nucleon potential. The $\Sigma^0 p$ final state from kaonic absorptions in Carbon has been studied and characterized quantitavely and qualitatively for the first time. The results include ratios for the two-nucleon vs three-nucleon absorption in this specific channel, and a systematic search for signals of bound states.

[1] M. Adinolfi et al., Nucl. Instr. Meth. A 488, 51-73 (2002)

[2] Y. Akaishi and T. Yamazaki, Phys. Rev. C 65, 044005 (2002)