乞掲示

理化学研究所原子核グループコロキウム　*2002. 6. 17*

講師 ： Prof. Yoshinori Akaishi

(KEK)

題目 ： Nuclear $\bar{\mathrm{K}}$ Bound States in Light Nuclei

— A new paradigm in nuclear physics —

∗ The seminar will be given in *English.*

日時 ： 2002年 6月 17日 (Mon.)　14:00 –

場所 ： RIKEN Main Bldg. 1F Seminar Room

Abstract

The possible existence of deeply bound nuclear $\bar{\mathrm{K}}$ states will be discussed. The nuclear ground states of a K^- in (pp), ^{3}He, ^{4}He and ^{8}Be are predicted to be discrete states with binding energies of 48, 108, 86 and 113 MeV and widths of 61, 20, 34 and 38 MeV, respectively. It is found that a substantial contraction of the surrounding nucleus is induced due to the strong attraction of the $I = 0$ $\bar{\mathrm{K}}$N pair, thus forming an unusually dense and cold nuclear medium.
The ^{4}He(stopped K^-, n) reaction is proposed by Iwasaki et al. to form the $T = 0$ $\mathrm{K}^- \otimes {}^3$He state. To produce more exotic nuclear $\bar{\mathrm{K}}$ states in proton-rich systems like K^-pp and K^-ppp, the use of the (K^-, π^-) reaction is also proposed by Yamazaki, in which $\Lambda(1405)$ plays the role of a doorway state.
If such exotic states are confirmed experimentally, "bound-kaon nuclear spe ctroscopy" would create a new paradigm in strangeness nuclear physics. *i)* High-density cold nuclear matter formed around K^- could provide information concerning a modification of hadron properties in the medium. *ii)* Empirical information on the possibility for kaon condensation and strange matter could be obtained.

∗ Host researcher : M. Iwasaki (RIKEN)

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