

The 1st IReNA-Ukakuren Joint Workshop “Advancing Professional Development in Nuclear Astrophysics and Beyond”

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Kaons in nuclei: theoretical calculations of the anti-kaon-nucleus interaction and the implications

Wednesday, 30 August 2023 10:00 (40 minutes)

The interaction between the anti-kaon (\bar{K}) and the nucleus is one of the hot topics in recent hadron physics. Since the $\bar{K}N$ interaction is attractive enough to produce a bound state as the $\Lambda(1405)$ baryon, the \bar{K} -nucleus interaction is expected to be attractive as well, providing an important clue to understanding the behavior of strange quarks in dense matter such as neutron stars. Recently, we have been able to access information about the \bar{K} -nucleus interaction via the hadronic reactions using anti-kaon beams, for example at J-PARC. In particular, precise data are available for the kaonic atoms, the Coulomb-assisted K^- -nucleus bound states, and the kaonic nuclei, the \bar{K} -nucleus bound states with the strong interactions. In the present talk I would like to present our theoretical work on the evaluation of the \bar{K} -nucleus potentials which reproduce the experimental data on the kaonic atoms and kaonic nuclei.

Primary author: YAMAGATA-SEKIHARA, Junko (Kyoto Sangyo University)

Presenter: YAMAGATA-SEKIHARA, Junko (Kyoto Sangyo University)

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