HAW14-2014-000654

Abstract for an Invited Paper
for the HAW14 Meeting of
the American Physical Society

Structure of Lambda Hypernuclei with Antisymmetrized Molecular Dynamics

MASAHIRO ISAKA, RIKEN Nishina Center

In this talk, we will discuss the structure change caused by a Λ particle and structure of neutron-rich (n-rich) and *sd* shell Λ hypernuclei based on the antisymmetrized molecular dynamics (AMD). One of the unique and interesting aspects of hypernuclei is structure change caused by a hyperon(s) as an impurity in nuclei. In light Λ hypernuclei, experimental and theoretical studies have revealed a couple of interesting structure changes such as shrinkage of the inter-cluster distance. In n-rich and *sd* shell Λ hypernuclei, it is expected that the variety of structure and structure changes will appear in the low energy regions, because n-rich and *sd* shell nuclei have various structures. For example, the n-rich nucleus ^{11}Be has the parity-inverted ground-state $1/2^+$, which is inconsistent with the ordinary shell model picture. In *sd* shell nuclei, it has been discussed that various deformations appear in the ground and low-lying states. For example, ^{24}Mg is a candidate of triaxially deformed nuclei with the presence of the low-lying 2nd 2^+ state. To reveal the structure of the corresponding Λ hypernuclei, we have extended the AMD model for hypernuclei (HyperAMD) and applied it to n-rich and *sd* shell Λ hypernuclei. The AMD model can describe various nuclear structures without assumptions on clustering and symmetry of nuclear deformations. Combined with the generator coordinate method (GCM), the HyperAMD model succeeded to describe the low-lying structure of *p*-*sd* shell Λ hypernuclei. In this study, we investigate several n-rich and *sd* shell Λ hypernuclei such as ${}^{12}_{\Lambda}$Be and ${}^{25}_{\Lambda}$Mg. In this talk, we will discuss the changes of the parity-inverted ground state of ^{11}Be by adding a Λ particle. Furthermore, in ${}^{25}_{\Lambda}$Mg, we will discuss a possibility to identify the nuclear (triaxial) deformation of Mg by using Λ as a probe.