Contribution ID: **68** Type: **online talk**

Energy spectra of 15ΞC and 12ΞBe, and ΞN two-body interaction

Monday 27 June 2022 16:15 (15 minutes)

We study the energy spectra of Ξ hypernuclei ${}^{15}_{\Xi}$C and ${}^{12}_{\Xi}$Be with a relativistic mean field (RMF) model. The RMF parameters are optimized to reproduce the average energy of KINKA and IRRAWADDY events for the ground state and also the average energy of KISO and IBUKI events for the excited state in ${}^{15}_{\Xi}$C. The depth of the $\Xi - N$ mean field potential is found to be about -14 – -12 MeV in the nuclear matter limit. We further introduce two-body residual s- and p-wave interactions between the valence nucleon(s) and Ξ particle. We found that the s-wave interaction alone deduced from the HAL Lattice-QCD results is too weak to reproduce the energy difference between IRRAWADDY and KINKA events. The p-wave interaction is added and fitted to reproduce the energy difference. The resulting p-wave interaction together with the s-wave one gives a reasonable agreement with the observed events. The model is further applied to predict the energy spectrum of ${}^{12}_{\Xi}$Be.

Author: TANIMURA, Yusuke (Tohoku University)

Co-authors: SAGAWA, Hiroyuki (RIKEN/University of Aizu); SUN, Tingting (Zhengzhou University); HIYAMA, Emiko (Tohoku University/RIKEN)

Presenter: TANIMURA, Yusuke (Tohoku University)

Session Classification: 1; Mon-III