REAFFIRMATION OF A DEEPLY BOUND XI- 14N SYSTEM, KISO EVENT, WITH A RECENT EXPERIMENTAL RESULT

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Baryon-Baryon interaction can be understood under the SU(3)f symmetry in unified way via double strangeness (S = −2) nuclei which is a quite effective object providing the key information for the interaction. Recently, the interaction in S = −2 sector is noted to derive the information of the EOS of neutron stars which should include Hyperons due to higher density than that of ordinal nuclei.

Although experimental information is so far very limited, the KISO event showed as the first evidence of deeply bound Ξ^-- ^{14}N system via the sequence of Ξ^- + ^{14}N => $^{10}_{\Lambda}$Be +$^{5}_{\Lambda}$He where the Ξ^- binding, BΞ^-, was measured to be 4.38 +/− 0.25 MeV if daughter hypernuclei were produced in ground states. In the discussion for the excited state's production of $^{10}_{\Lambda}$Be, we took theoretical predictions for the level of the 2nd excited state due to no experimental data, at that time. Therefore we obtained the BΞ^- to be 1.11 +/− 0.25 MeV, which was far from the atomic 3*D* state, and understood the presence of a deeply bound system for Ξ^- and nucleus. Very recently, experimental result for the levels of $^{10}_{\Lambda}$Be was presented by J-Lab experiment, E05-115. The ground and 1st excited state are applicable for the KISO event and the BΞ^- given by the 1st excited level presents 1.03 +/− 0.18 MeV, which is largely from 3*D* atomic capture by more than 4.6 standard deviations. Ξ^--nucleus interaction is reaffirmed to be attractive with the recent experimental result.