

Information on double hypernuclei with nuclear emulsion detector

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The detection of double hypernucleus having two units of Strangeness has now reached 46 sample events. The only experiment that has continued to detect double-hypernuclei for the last 35 years is experiments using nuclear emulsion as a detector in Japan. During that period, significant progress has been made in experimental and analytical techniques. Under such technological developments, it has been found that in double lambda hypernuclei, the binding energy of the two lambda hyperons to the nucleus varies linearly with the atomic mass number. Some systems formed by Ξ^- and 14-nitrogen show very deep bound states, and s- and p-orbits appear as nuclear level structure in $^{15}\text{C}_{\Xi}$, which confirms the existence of the Ξ hypernucleus. In the near future, it is expected that a machine-learning model can be implemented to scan the entire region of the emulsion to detect double hypernuclei in about a thousand samples and obtain more detailed information.

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