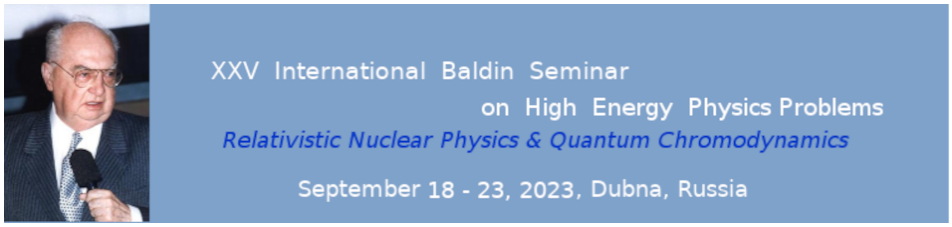


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# Exotic Λ-hypernuclei: stability and charge symmetry breaking

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In strangeness nuclear physics, exotic hypernuclei with a proton or neutron excess are of particular interest now. Such systems relatively poorly explored in experiment can be produced in heavy ion collisions, particularly at NICA complex developed at JINR. Studies of exotic hypernuclei allow to improve the understanding of subtle features of the hyperon-nucleon and hyperon-nucleus interactions. In general, the glue-like role of the Λ-hyperon allows for a chance to stabilize unbound nucleon systems and even get bound hypernuclei with unstable cores. Various aspects of interaction, such as charge symmetry breaking (CSB), may then further affect the stability of these systems.

The structure of light Λ-hypernuclei is treated in the framework of Hartree-Fock approach with Skyrme interaction. This phenomenological approach allows us to analyze the dependence of hypernuclear properties on both nucleon-nucleon and hyperon-nucleon components of the general baryonic interaction. We assess the possibility of the $^{9}$C hypernucleus, as well as heavier hypernuclei up to Z = 20, to be bound. To this aim, we verify the accuracy of hyperon binding energy values obtained within the approach. Calculated hyperon binding energies and experimental proton separation energies are then used to examine the stability of a chain of hypernuclei next to the proton drip line. We further show the way to treat charge symmetry breaking ΛN interaction within the Skyrme-Hartree-Fock approach. We calculate the CSB contribution to the hyperon binding energy in proton- and neutron-rich carbon hypernuclei and demonstrate its importance for select exotic hypernuclei.

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