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Exploration for Hyperon Halo with Density Functional Theory

Tuesday, 24 September 2024 17:15 (20 minutes)

The halo phenomenon is a hot topic in the nuclear structure study from both the theoretical and experimental points of view. Deep insights into the nucleon-nucleon interaction are needed to understand this phenomenon. Many neutron or proton-halo nuclei are observed in neutron or proton-rich nuclei by the experiments. With the strangeness quark included, the hyperon could influence the halo phenomenon, providing new insights into the baryon-baryon interaction. In this talk, we will investigate the hyperon halo orbits in light and heavy neutron-rich hypernucleus [1, 2]. We will also explore the possibility of a hyperon halo with a multi-hyperon hypernucleus. The lack of experiment data for the hyperon-hyperon interaction provides a chance to discuss the influence of the ambiguity of the hyperon-hyperon interaction on the multi-hyperon halo.

[1] Ying Zhang, Hiroyuki Sagawa, and Emiko Hiyama, Hyperon halo structure of C and B isotopes, Phys. Rev. C 103, 034321 (2021).
[2] Ying Zhang, Hiroyuki Sagawa, and Emiko Hiyama, Prediction of Exotic Hyperon Halos in Neutron-Rich Zr Hypernuclei, Prog. Theor. Exp. Phys. 2022, 023D01 (2022).

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