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Delayed pion spectroscopy of Λ hypernuclei

Recently an experimental program of novel systematic studies of Λ -hypernuclei using pionic decay was established at JLab [1, 2] and at Mainz [3]. Meanwhile, a new ultra-precise RF timing technique was developed, which opens new possibilities for hypernuclear studies at modern electron and proton accelerators [4]. By using this timing technique, delayed pion ultra-precise spectroscopy of Λ hypernuclei can be realized at Jlab and Mainz, and binding energies of Λ -particles can be determined with precision better than 10 keV. This will be an essential step toward understanding of the strange sector baryon-baryon interactions. In addition, understanding of the unified baryon-baryon interactions is necessary to describe high density nuclear matter containing hyperons.

References

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