

Reaction spectroscopy of Lambda hypernuclei at JLab and J-PARC

Wednesday, 7 June 2023 15:24 (18 minutes)

Preparation works are now in progress for next-generation Lambda hypernuclear spectroscopy using the $(e,e'K^+)$ reaction at Jefferson Laboratory (JLab) and the (π^+,K^+) reaction at J-PARC. The experiments at JLab aim to clarify the isospin dependence of Lambda hypernuclei using Ca40,48 targets and the mass number dependence from light to heavy hypernuclei such as ${}_{\Lambda}^{208}\text{Tl}$ with existing HKS, HES spectrometers and newly constructed PCS magnets. The (π^+,K^+) reaction spectroscopy of Lambda hypernuclei with the new S-2S spectrometer, which was constructed for the Ξ hypernuclear spectroscopy at J-PARC, is also planned.

Based on the results of these experiments, drastic progresses in understanding baryon interactions and solving the hyperon puzzle (why neutron stars with twice Solar mass do not collapse) will be realized by carpet bombing research of hypernuclei at the "Hypernuclear Factory" to be realized in the J-PARC Hadron Experimental Hall Extension Project. The current status and future prospects of the Lambda hypernuclear study at JLab and J-PARC will be discussed. (On behalf of JLab Hypernuclear Collaboration, J-PARC E94 and $S\pi K$ Collaborations)

Primary author: Prof. NAKAMURA, Satoshi N. (the University of Tokyo)

Presenter: Prof. NAKAMURA, Satoshi N. (the University of Tokyo)

Session Classification: Hypernuclei and kaonic atoms

Track Classification: Hypernuclei and kaonic atoms