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Missing mass spectroscopy of potassium hypernuclei at Jefferson Lab

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We are going to perform missing mass spectroscopy of various Λ hypernuclei using the $(e, e'K^+)$ reaction at the Thomas Jefferson National Accelerator Facility (JLab). This experimental campaign contains the first measurement of medium-mass hyperisotopes of ${}^{40}_{\Lambda}\mathrm{K}$ and ${}^{48}_{\Lambda}\mathrm{K}$ using isotopically enriched calcium target [JLab E12-15-008]. The intense electron beam and high resolution spectrometers achieve will much better energy resolution, at a sub-MeV level, than the existing hadronic experiments. Precise and accurate measurement of the medium-mass hyperisotopes will enable us to investigate the ΛN interaction in nuclei including the ΛNN three-body force which plays a key role for the stiffness of neutron stars. I will talk about the experimental prospects and the expected results of these measurements based on detailed simulation and study.

Primary author: AKIYAMA, Takeru (Tohoku University)

Presenter: AKIYAMA, Takeru (Tohoku University)

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