

Abstract Submitted
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Detailed simulation study of the electro-production of Lambda hypernuclei at Jefferson Lab MANAMI FUJITA, Tohoku University, JLAB HYPERNUCLEAR COLLABORATION — In the JLab E05-115 experiment, ($e, e' K^+$) reaction of Λ hypernuclei, our group observed mass spectra of Λ hypernuclei for $A=1\sim 52$. To reconstruct the missing mass of these hypernuclei, a conversion of the information such as particle momenta and angles at the focal planes to those of particles at the target point requires the inverse transfer matrix. The inverse transfer matrix is obtained at first by means of TOSCA(3 dimensional magnetic field calculation code) and Geant4 simulation. The inverse transfer matrix is optimized reproducing the degraded resolution ($\delta p/p \sim 10^{-4}$) due to imperfectness of the models. It is crucial to estimate the systematic error caused by this optimization procedures. We developed a full Monte Carlo simulation code and generated dummy data with an arbitrary given hypernuclear masses. The code for the real data analysis was applied to the dummy data in order to estimate the systematic error. The realistic Monte Carlo simulation is also important for the design of the next experiment at JLab. We plan to extend the measurement mass number up to $A=208$. Realistic simulation of the background rates in scattered electron detector system and optimization of the setup will be discussed in the presentation.

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