Photo and Electroproduction of Kaon Off a Deuteron

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Abstrak

During the first and second year of the research activities, the following progress has been achieved:
1. Investigation of the Response Functions. All possible Response Functions in photo- and electroproduction of kaons on the nucleon have been investigated in the framework of an isobaric model. We found that some Response Functions are sensitive to the choice of the strange hadron form factors. Meanwhile, we have also improved the elementary model for kaon photoproduction by using a certain method to maintain gauge invariance of the amplitude. We have published the results in Ref. [1, 2, 3] (see attachments).
2. Some Phenomenological Aspects in Kaon Photoproduction. The elementary operator can be used to study some interesting aspects in kaon photoproduction, i.e. the Gerasimov-Drell-Hearn sum-rule and the missing resonance in kaon photoproduction. We have published the results in Ref. [4, 5]
3. Photoproduction of Kaon off a Deuteron. Using an established and consistent model for kaon photoproduction on the nucleon, we have calculated photoproduction of kaons on the deuteron in the frame-work of the nucleon spectator model. We have compared the result with the previous study by Xiaodong Li et. al. [6] in Ref. [7]
4. Photoproduction of Kaon off a Deuteron with Final State Interactions. The previous work has been extended by including the effects from final state inter-actions (FSI). To achieve this, we used the formalism of three-body wave functions developed by the Okayama-Bochum group. The results have been published in Ref. [8].
5. Electroproduction of Kaon off a Deuteron with Final State Interactions.

As the final work of this project, we have finished the fortran code for calculating kaon electroproduction of a deuteron. This part became a collaborated work with the Okayama-Bochum group.