Modelling the Kaon Photoproduction

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The subject of this contribution is to show the basic properties of the isobar model and to discuss the new outcomes of the fitting process made with a consistent high-spin formalism for interacting fields.

Formerly, an inconsistent prescription for spin-3/2 and spin-5/2 resonances was used which led to the propagation of the unphysical lower-spin modes. Recently, we adapted to the isobar model a theory for interacting high-spin fields formulated by V. Pascalutsa [1] and T. Vrancx *et al.* [2] where the lower-spin modes cancel in the amplitude. We implemented this so-called consistent formalism namely for spin-3/2 and spin 5/2 nucleon resonances. Since the potentially dangerous term with the Mandelstam variable u equaling zero vanishes in the amplitude, we introduced this new formalism for spin-3/2 hyperon resonances as well. This enabled us to add for the first time the spin-3/2 hyperon resonances to the analysis.

During the fitting procedure, we adjusted around 20 free parameters to approximately 3500 data points on the cross section, hyperon polarisation and beam asymmetry from various experiments. The behaviour of the most promising results will be discussed and their predictions will be compared with experimental data.

[1] V. Pascalutsa, Phys. Rev. D 58 (1998) 096002

[2] T. Vrancx *et al.*, Phys. Rev. C 84 (2011) 045201