

Effects of the Spin 5/2 Nucleon Resonances on the Elementary Kaon Photoproduction

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We have studied kaon photoproduction on the proton by using the prescription of Pascalutsa and Vrancx [1] (model A). We use an effective Lagrangian approach to calculate the background and resonance amplitudes. All nucleon resonances with spin 5/2 listed by the Particle Data Group are included in order to see their effect in the model. The unknown coupling constants are extracted from fitting to around 7400 data points. We compare the result with that of different formulation (model B [2]). We found that model A leads to a better agreement with experimental data than model B. Some interesting phenomena appearing due to the effects of the spin 5/2 nucleon resonance have also been elaborated. A sample of comparison between the calculated differential cross section and experimental data is shown in Fig. 1.

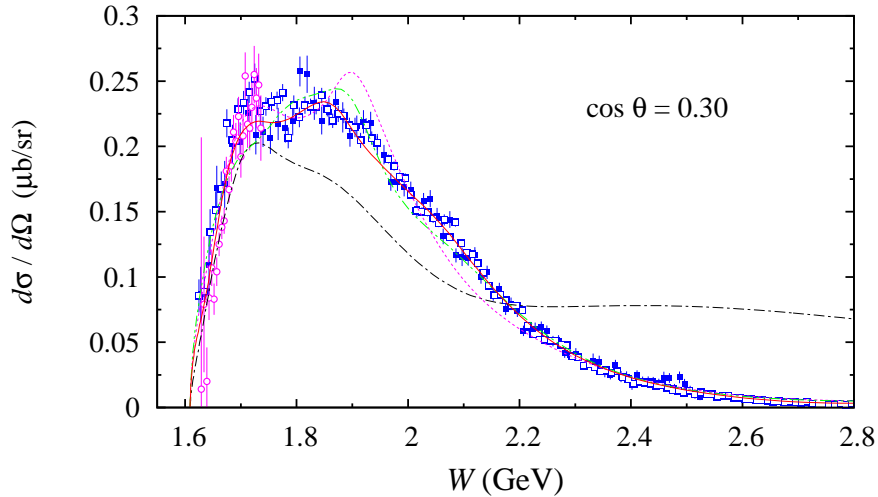


Figure 1: Calculated differential cross section from Kaon-Maid (dash-dotted line [3]), model A (dash-dot-dotted line), model B (dotted line) and Ref. [4] (solid line). Experimental data are from the CLAS collaboration (solid squares [5] and open squares [6]), LEPS collaboration (solid triangles [7]), and Crystal Ball collaboration (open circles [8]).

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