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Baryon - Omega Meson Electroproduction

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Abstract content
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This is a follow up in the work of the differential cross section for $p(e, e' \omega)p$ studied at a $Q^2 \approx 5.5$ GeV [1]. Here Q^2 represents the four momentum squared of the virtual photon in the excitation of baryonic resonances by an electron projectile. The reaction is exclusive to the omega decay channel. In order to extract the omega-meson differential cross section from the JLAB data, a computational based technique was used to select those bins in the space of the kinematic variables where the data passes certain selection criteria. This takes into account the measure of the robustness of the stripping of the omega peak from the multi-pion background, as well as the statistics in the measured data and the Monte Carlo simulation of the signal and background physics. An error estimation technique for the cross-section has also been further developed. This is based on determining the dependence of the extracted cross-section on parameters of the experimental set-up (including parameters for the spectrometer, target and beam geometries and performance). The data presented are considered the final data of the measurements. There is close agreement with data from the CLAS [2] experiment in the Q^2 region of overlap. There is an extension of this data into a completely new region, which is the highest yet measured.

[1] M.M. Dalton et al, Phys. Rev. C 80 , 015205 (2009).

[2] M. Ungaro et al.,(CLAS), Phys. Rev.Lett 97, 112003 (2006), hep-ex/0606042

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