

Measurement of Cross-Sections of exclusive π^0 Photo-production on Hydrogen from 1.1 GeV - 5.45 GeV using $e+e-\gamma$ decay from the CLAS/g12 data

This note describes photoproduction of the π^0 meson using the CLAS/g12 data at beam energies of 1.1 GeV to 5.45 GeV. The reaction observed is $\gamma p \rightarrow p e+e-(\gamma)$. This final state is the sum of two subprocesses, the π^0 meson decay through the three-body Dalitz decay mode of $\pi^0 \rightarrow e+e-\gamma$ and the conversion (mostly in the target material) of one photon from $\pi^0 \rightarrow \gamma \gamma$ decay into a $e+e-$ pair. The authors report measurements of two π^0 meson differential cross-sections. They also report fits using the SAID model parametrization.

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- First round of comments to author: October 28, 2016
- Status (11/3/16): Waiting on author's response to 1st round.

Most Important Points:

a) Few "important" issues. Overall, analysis and note well done.

b) In order to be able to judge how well the simulation resolution matches the detector resolution, we would like to see extra figures (in addition to missing mass and momentum and angle distributions which are given throughout the note) from this analysis for differences of momenta and angles (reconstructed - measured) of each of the three particles for both the simulated and the real data..

b) We would like to see more detail on the method by which the systematic uncertainty (error) of the normalization correction was determined. This is a large correction, which absorbs some acceptance and resolution effects, but is only quoted 0.5%?