

Role of a triangle singularity in the $\pi N(1535)$ contribution to $\gamma p \rightarrow p\pi^0\eta$

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We have analyzed the $\gamma p \rightarrow p\pi^0\eta$ process with a particular focus on the role of the triangle singularity which appears in the decay of the $\Delta(1700)$ into $\eta\Delta(1232)$,

where the $\Delta(1232)$ goes into p emitting a π^0 , while the $N(1535)$ is formed from the ηp interaction.

In addition to the triangle diagram, we take account of the tree level contribution stemming from the $\gamma p \rightarrow \Delta(1700) \rightarrow \eta\Delta(1232)$ process, followed by $\Delta(1232) \rightarrow \pi^0 p$.

We have obtained a characteristic energy dependence from the triangle diagram in the $\pi^0 N(1535)$ production,

and a good agreement with the experimental determination up to 1.3 GeV.

Furthermore, we found some differences between our results in the $\eta\Delta(1232)$ production and the analysis performed in the experiment,

which might indicate the importance of incorporating the contribution from the triangle diagram in the standard partial wave analysis.

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