

Systematic Studies for the π^0 Calibration of the Crystal-Ball Detector

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2 Preparation

The Process

$$\gamma + p \rightarrow \pi^0 + p \rightarrow p + \gamma_1 \gamma_2 \quad (1)$$

$$m_{\pi^0} = \sqrt{2E_1 E_2 (1 - \cos(\alpha))} \quad (2)$$

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- Is there an energy dependency in the CB-Detector and how can it be checked? $\rightarrow |E_1 - E_2| < 25 \text{ MeV}$
- What are the reasons for the dependency?

Crystal-Ball-Function / Reduction of the Underground

- Gaussian Fit Function \rightarrow Crystal-Ball Fit Function

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- Check if the registered particles are charged \rightarrow Reduction of the underground

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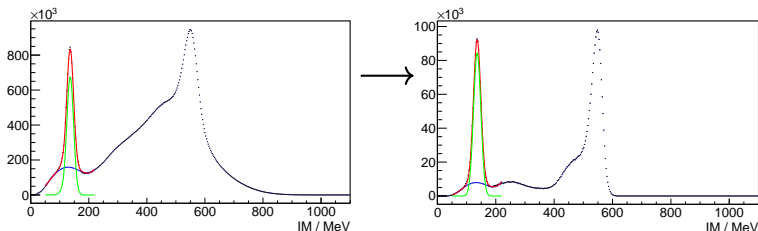


Abbildung: Beamtime: Example for not reduced and reduced underground

Eventgenerator