Transverse Impact Parameter Resolution

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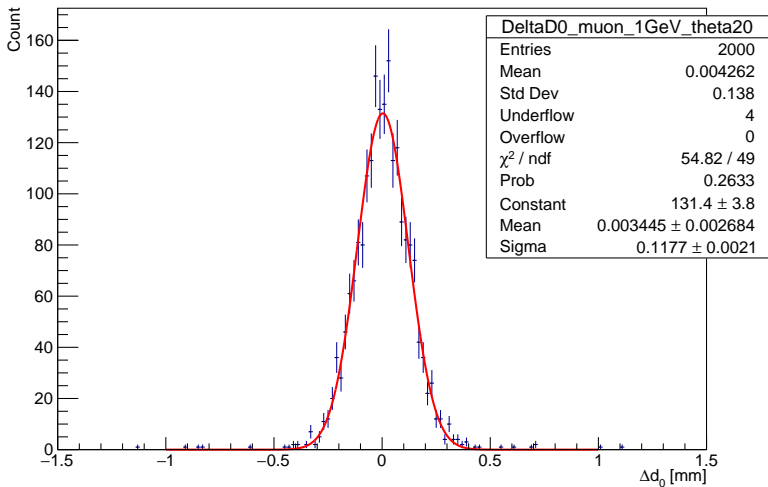
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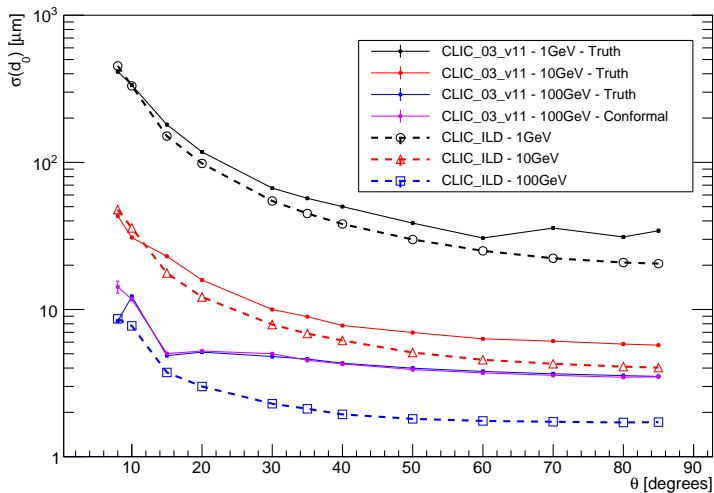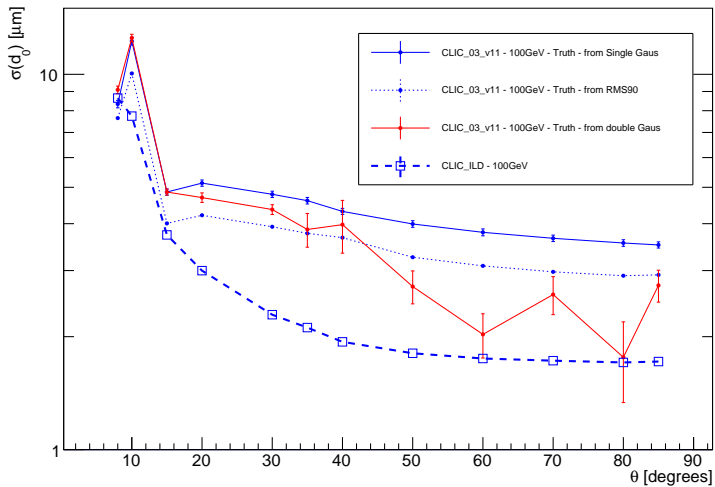
Introduction

- The 2017-07-12 version of the ILC software was used.
- The *CLIC_o3_v11* detector model were used.
- Muons were fired with 1 GeV, 10 GeV and 100 GeV at various angles.
- This was repeated 2000 times.
- Events were reconstructed using truth tracking and conformal tracking.
- Events with $recoP < 0.9 trueP$ were excluded, primarily affects very forward events.
- $\sigma(d_0)$ for a given angle and energy was found by fitting a histogram of $d_{0_{reco}} - d_{0_{truth}}$ with a Gaussian. The RMS90 and a double Gaussian fit was also tested.

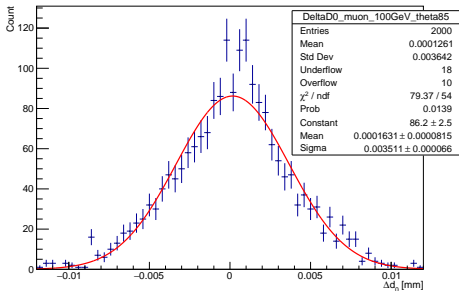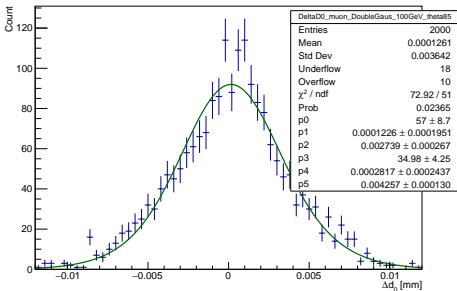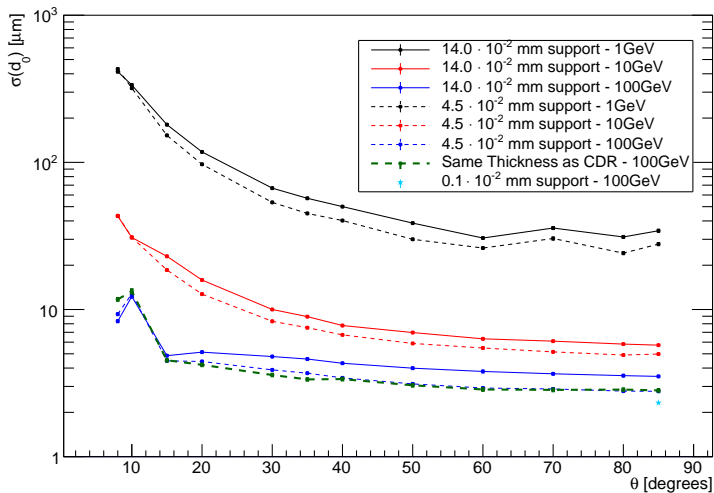# Example of $d_{0_{reco}} - d_{0_{truth}}$

CLIC_o3_v11 vs. CLIC ILD

Fit vs. RMS90

Δd_0 at 100 GeV and $\theta = 85°$

(a) Single Gaussian

(b) Double Gaussian

CLIC_o3_v11 vs. Thin CLIC_o3_v11

Number of Hits in VTX