

EIC Simulation Updates

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Parameters

- ▶ Single π^- going through all Si detector
- ▶ 100,000 events for each p_{truth} value: $p = 1, 5, 20$ GeV
- ▶ $1.0 < \eta < 1.2$, full ϕ coverage

$\sigma(\frac{dp}{p})$ vs number of hits

- ▶ Double Gaussian fit for each bin

$$f(x) = \frac{p_0}{\sqrt{2\pi p_2^2}} \exp\left(-\frac{1}{2}\left(\frac{x-p_1}{p_2}\right)^2\right) + \frac{p_3}{\sqrt{2\pi p_4^2}} \exp\left(-\frac{1}{2}\left(\frac{x-p_1}{p_4}\right)^2\right)$$

- ▶ Parameter restrictions

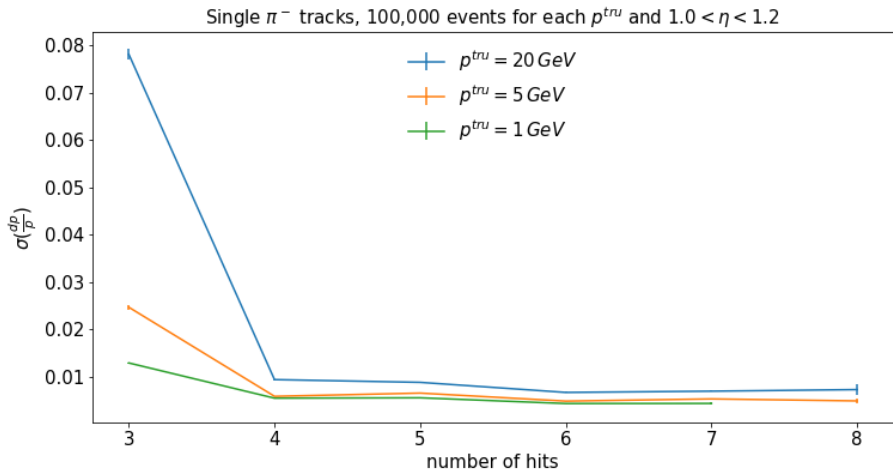
$$\max(|p_2|) = \max(|p_4|) = \text{range of the histogram} = \text{range of the fit (see slide 5)}$$

- ▶ Plot the standard deviation of the Gaussian that has the larger normalization factor

$$\text{If } |p_0| > |p_3|, \sigma(dp/p) = |p_2|$$

$$\text{If } |p_0| < |p_3|, \sigma(dp/p) = |p_4|$$

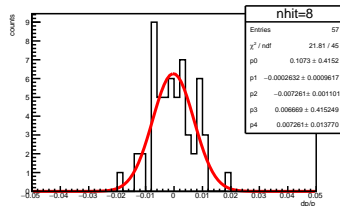
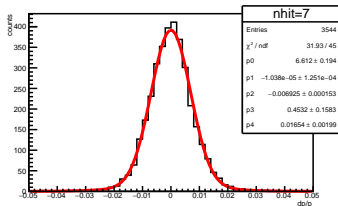
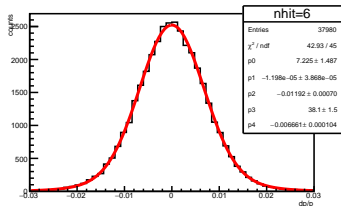
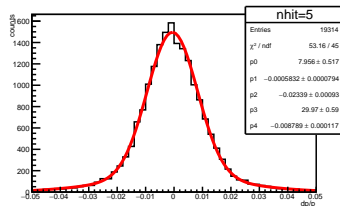
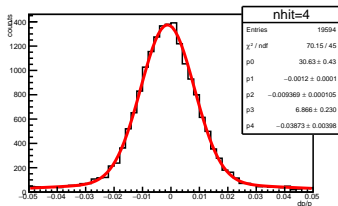
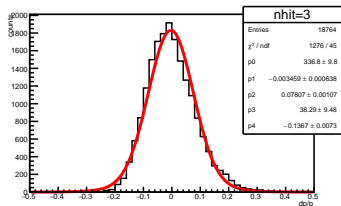
$\sigma\left(\frac{dp}{p}\right)$ vs number of hits (with small error bars)



dp/p distributions for 20 GeV for $1.0 < \eta < 1.2$

► x axis: dp/p.

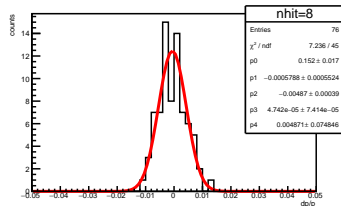
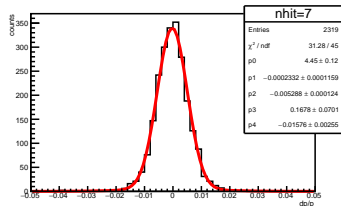
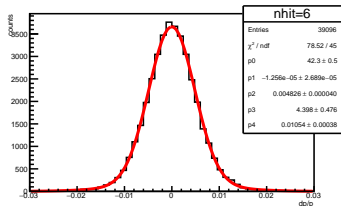
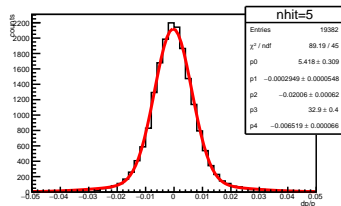
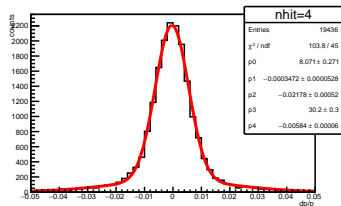
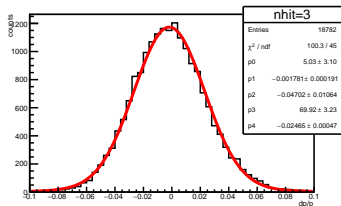
(-0.5, 0.5) for nhit = 3, (-0.03, 0.03) for nhit = 6, (-0.05, 0.05) for all other



dp/p distributions for 5 GeV for $1.0 < \eta < 1.2$

► x axis: dp/p.

(-0.1, 0.1) for nhit = 3, (-0.03, 0.03) for nhit = 6, (-0.05, 0.05) for all other



dp/p distributions for 1 GeV for $1.0 < \eta < 1.2$

- ▶ x axis: dp/p.
(-0.1, 0.1) for nhit = 3, (-0.05, 0.05) for all other

