

# $\bar{p}p \rightarrow e^+e^-$ study with PANDAroot

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# Outline

- 1 What has been done
- 2 Selection criteria
- 3 Results of simulation

# What has been done

- $\bar{p}p \rightarrow e^+e^-$
- $\bar{p}_{mom} = 4.0 \text{ GeV}/c, \sqrt{s} = 3.08 \text{ GeV}$
- $\bar{p}_{mom} = 5.5 \text{ GeV}/c, \sqrt{s} = 3.50 \text{ GeV}$
- $\bar{p}_{mom} = 7.0 \text{ GeV}/c, \sqrt{s} = 3.85 \text{ GeV}$
- $\bar{p}_{mom} = 8.5 \text{ GeV}/c, \sqrt{s} = 4.22 \text{ GeV}$
- $\bar{p}_{mom} = 10.0 \text{ GeV}/c, \sqrt{s} = 4.54 \text{ GeV}$
- $G_E/G_M = 0$

## Selection criteria

- Event is accepted if it has one positive and one negative tracks
- Both positive and negative tracks have to pass the cut  
 $0.7 < E/p < 1.2$
- Energy of positive and negative tracks have to comply with

$$\sqrt{s}/2 - \sigma^* < E < \sqrt{s}/2 + \sigma$$

$$^* \sigma = (\sqrt{s}/2)/5$$

$$\bar{p}_{mom} = 4.0 \text{ GeV}/c, \sqrt{s}/2 = 1.54 \text{ GeV}, \sigma = 0.31$$

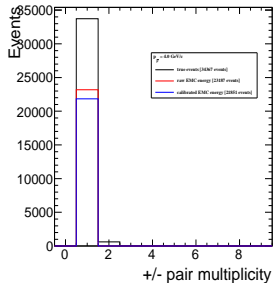
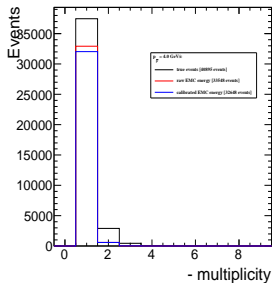
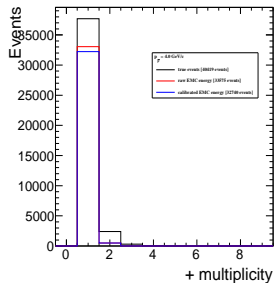
$$\bar{p}_{mom} = 5.5 \text{ GeV}/c, \sqrt{s}/2 = 1.75 \text{ GeV}, \sigma = 0.35$$

$$\bar{p}_{mom} = 7.0 \text{ GeV}/c, \sqrt{s}/2 = 1.93 \text{ GeV}, \sigma = 0.39$$

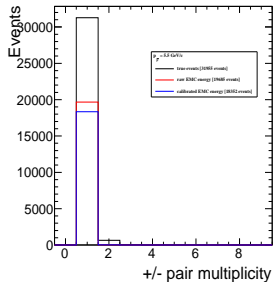
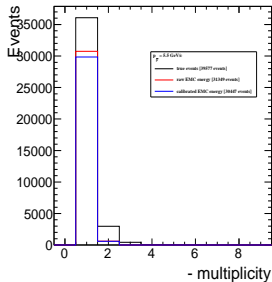
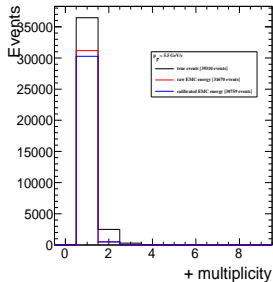
$$\bar{p}_{mom} = 8.5 \text{ GeV}/c, \sqrt{s}/2 = 2.11 \text{ GeV}, \sigma = 0.42$$

$$\bar{p}_{mom} = 10.0 \text{ GeV}/c, \sqrt{s}/2 = 2.27 \text{ GeV}, \sigma = 0.45$$

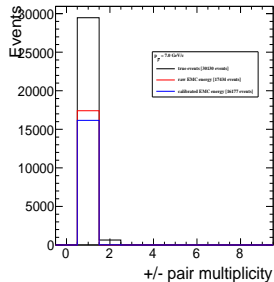
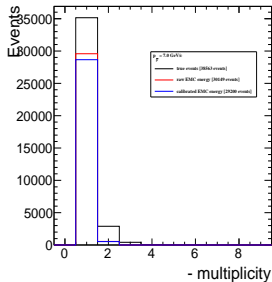
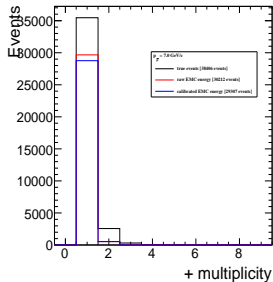
# Multiplicity [ $\bar{p}_{mom} = 4.0 \text{ GeV}/c$ ]



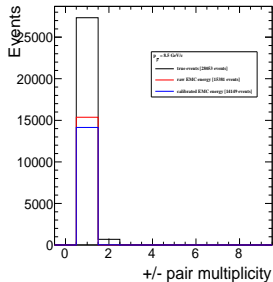
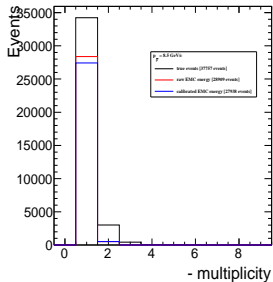
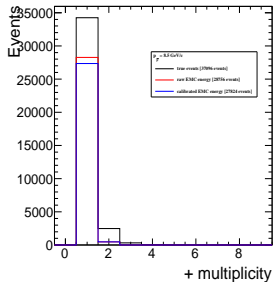
# Multiplicity [ $\bar{p}_{mom} = 5.5 \text{ GeV}/c$ ]



# Multiplicity [ $\bar{p}_{mom} = 7.0 \text{ GeV}/c$ ]

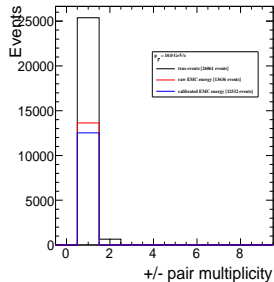
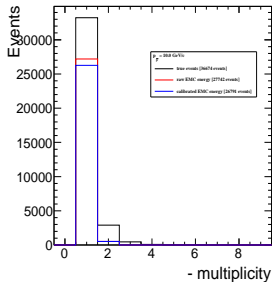
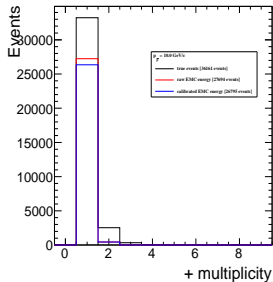


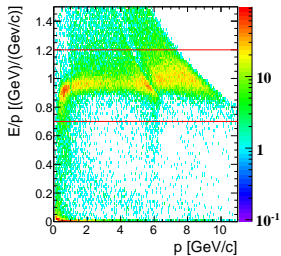
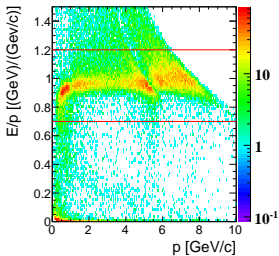
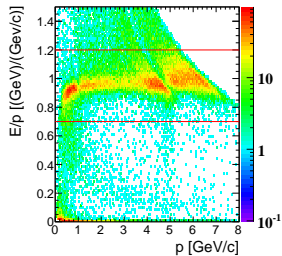
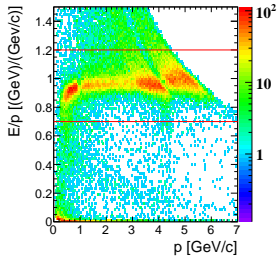
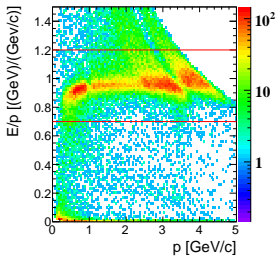
# Multiplicity [ $\bar{p}_{mom} = 8.5 \text{ GeV}/c$ ]

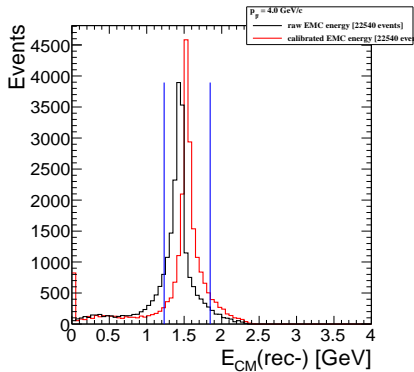
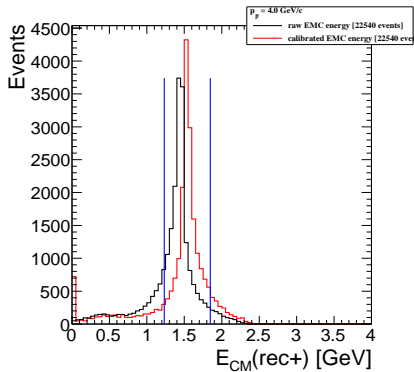


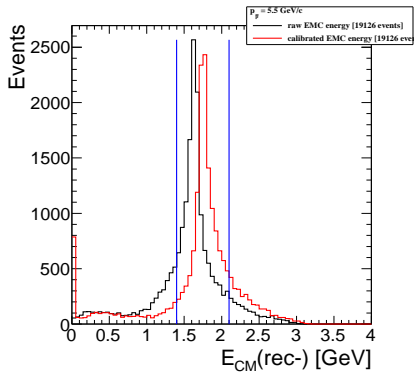
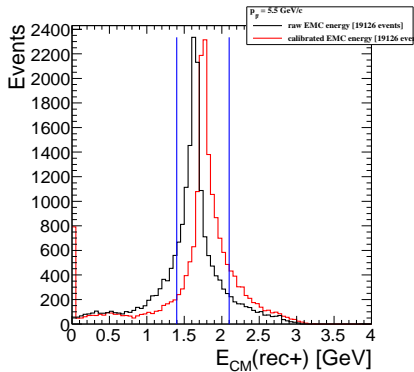


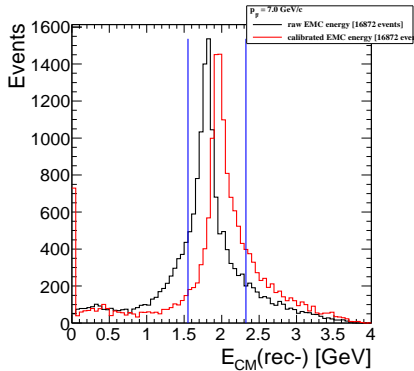
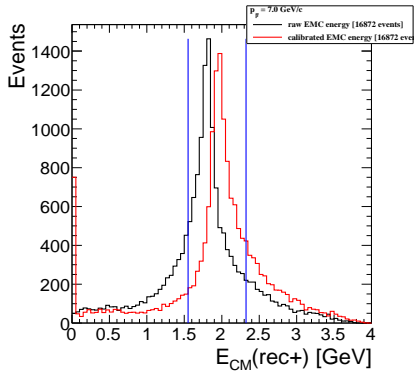
# Multiplicity [ $\bar{p}_{mom} = 10.0 \text{ GeV}/c$ ]

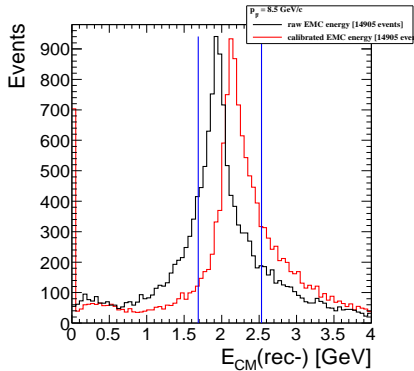
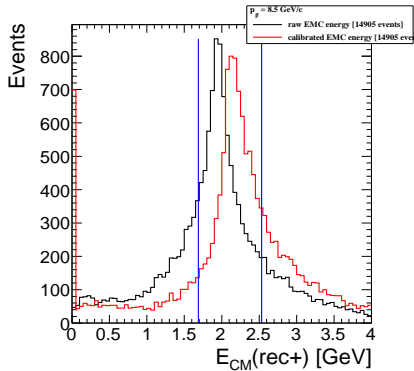


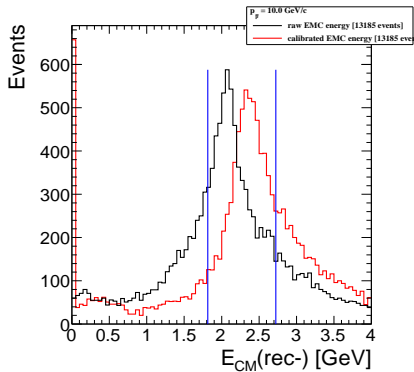
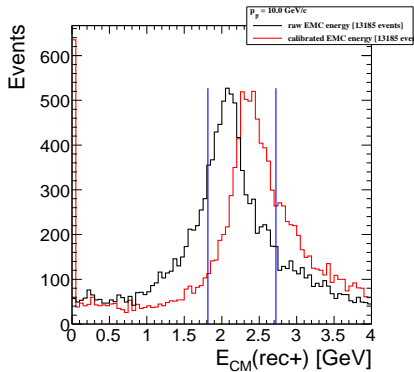




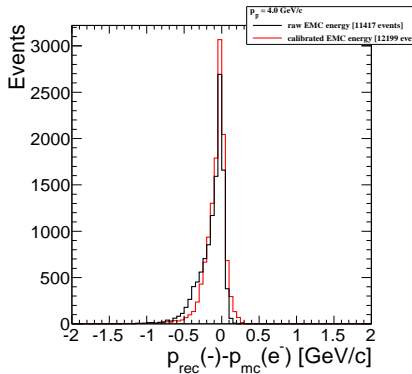
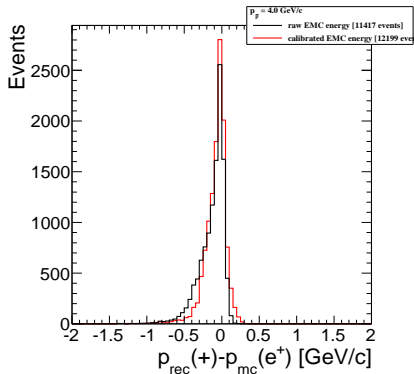






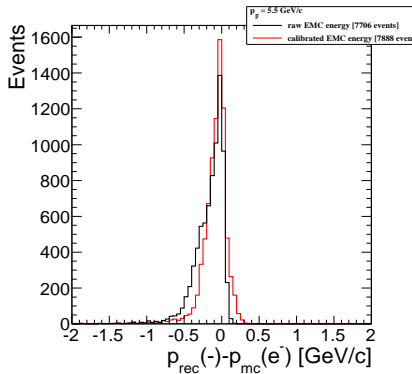
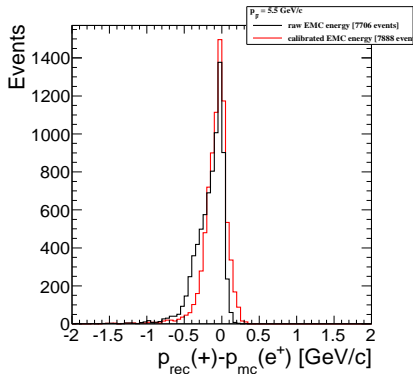


# Reconstructed - true momentum [ $\bar{p}_{mom} = 4.0 \text{ GeV}/c$ ]

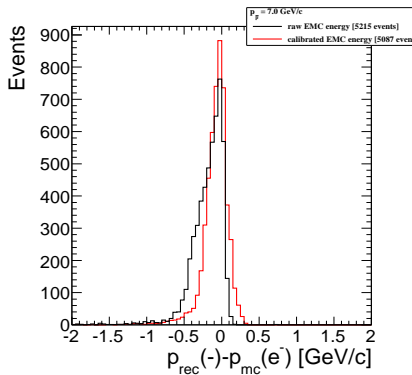
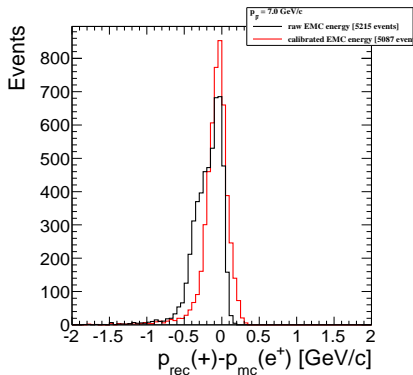




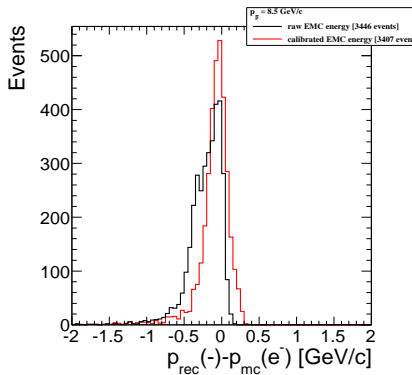
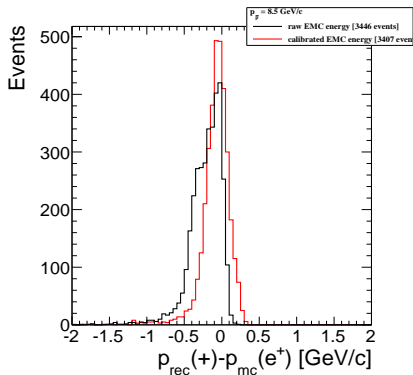
# Reconstructed - true momentum [ $\bar{p}_{mom} = 5.5 \text{ GeV}/c$ ]



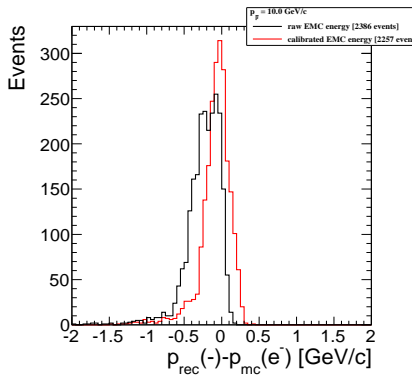
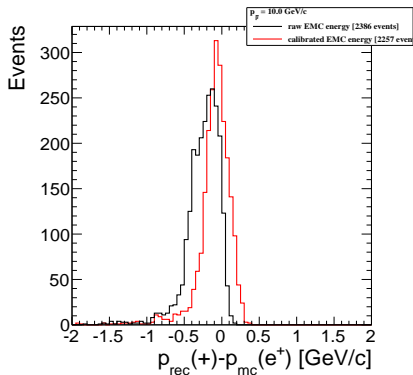
# Reconstructed - true momentum [ $\bar{p}_{mom} = 7.0 \text{ GeV}/c$ ]



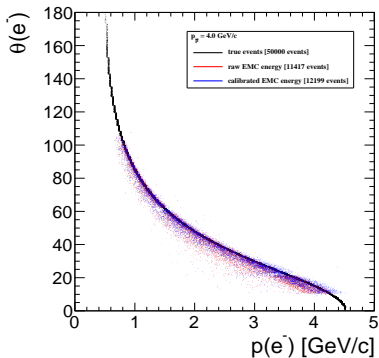
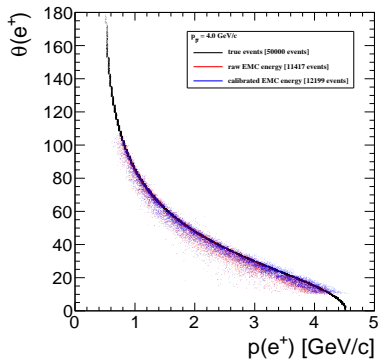
# Reconstructed - true momentum [ $\bar{p}_{mom} = 8.5 \text{ GeV}/c$ ]



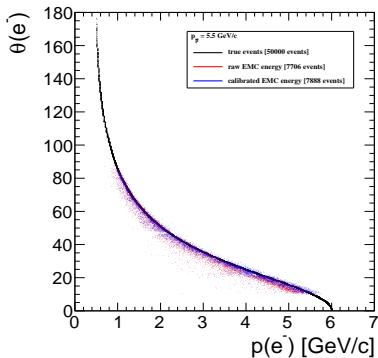
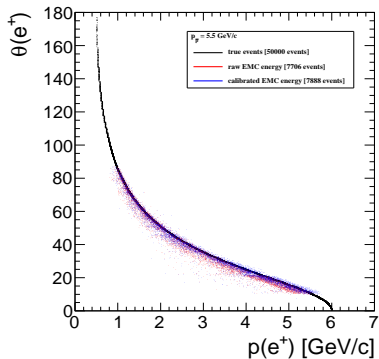
# Reconstructed - true momentum [ $\bar{p}_{mom} = 10.0 \text{ GeV}/c$ ]



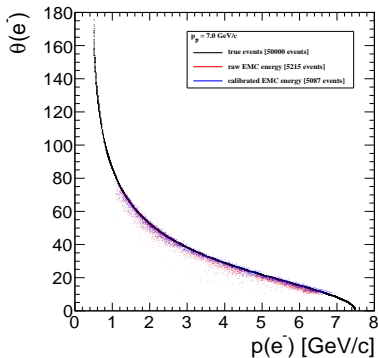
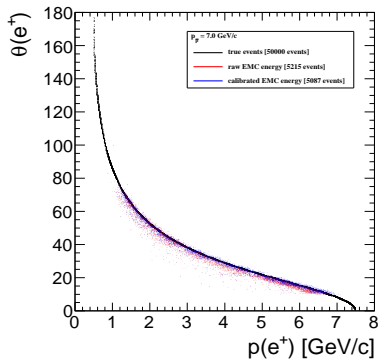
# Momentum vs $\cos\theta_{LAB}$ [ $\bar{p}_{mom} = 4.0 \text{ GeV}/c$ ]



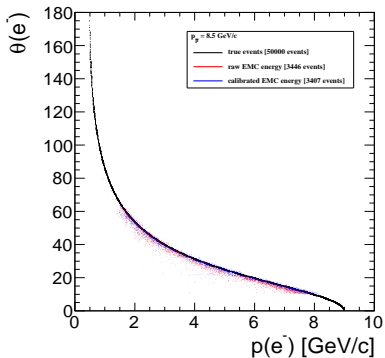
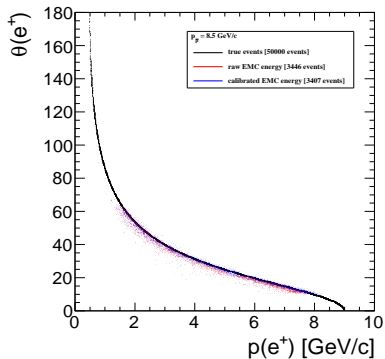
# Momentum vs $\cos\theta_{LAB}$ [ $\bar{p}_{mom} = 5.5 \text{ GeV}/c$ ]



# Momentum vs $\cos\theta_{LAB}$ [ $\bar{p}_{mom} = 7.0 \text{ GeV}/c$ ]

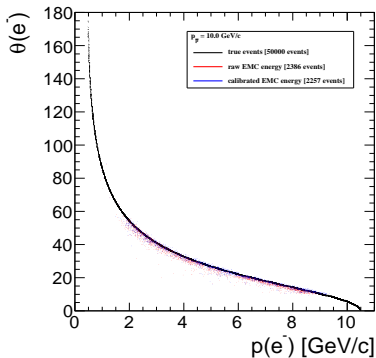
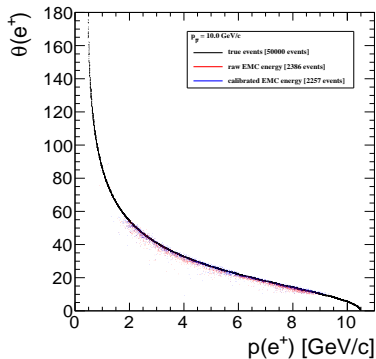


# Momentum vs $\cos\theta_{LAB}$ [ $\bar{p}_{mom} = 8.5 \text{ GeV}/c$ ]

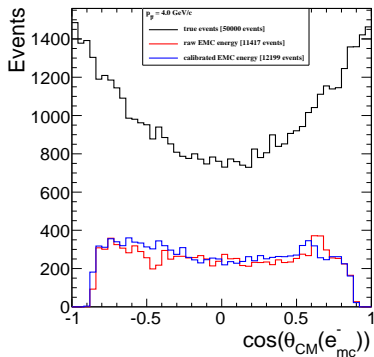
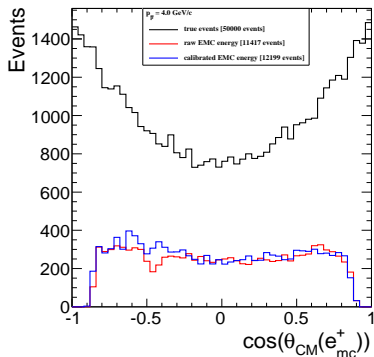




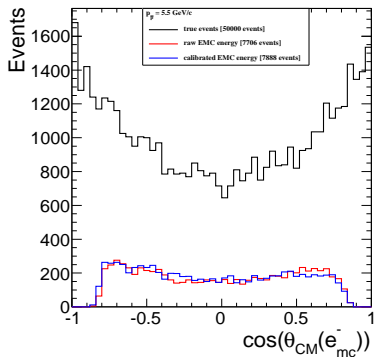
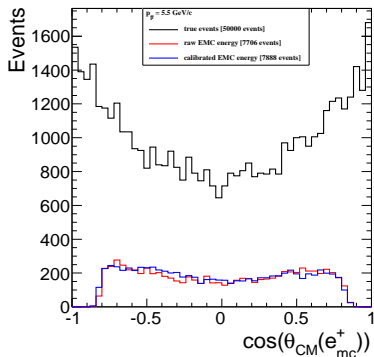
# Momentum vs $\cos\theta_{LAB}$ [ $\bar{p}_{mom} = 10.0 \text{ GeV}/c$ ]



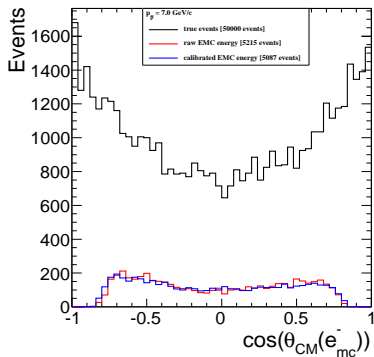
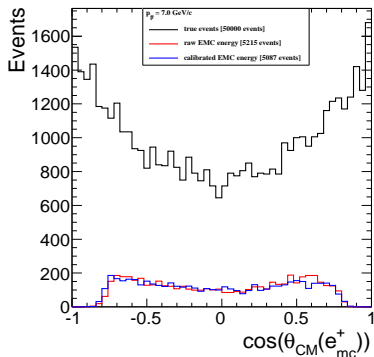
$$\cos\theta_{CM} [\bar{p}_{mom} = 4.0 \text{ GeV}/c]$$



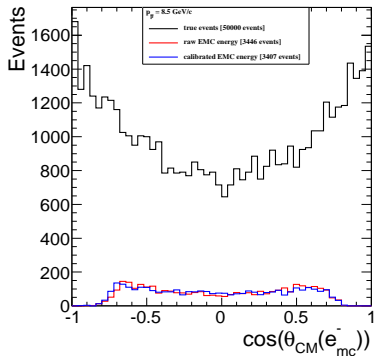
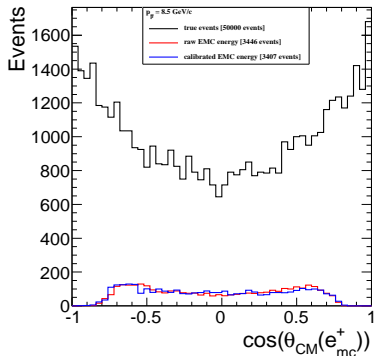
$$\cos\theta_{CM} [\bar{p}_{mom} = 5.5 \text{ GeV}/c]$$



$$\cos\theta_{CM} [\bar{p}_{mom} = 7.0 \text{ GeV}/c]$$



$$\cos\theta_{CM} [\bar{p}_{mom} = 8.5 \text{ GeV}/c]$$



$$\cos\theta_{CM} [\bar{p}_{mom} = 10.0 \text{ GeV}/c]$$

