Detector induced assymetry in CP violation measurements

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Comments - efficiencies

- very small errors in $D = \frac{\epsilon_+ - \epsilon_-}{\epsilon_+ + \epsilon_-}$
  $\rightarrow D = 0$ out of 5σ-range
- smaller error for *UP*-polarity due to higher statistics
- no difference between *UP* and *DOWN* within scope of the error
- in the MC: $\epsilon_{D^*} = 0$(`Dst_reconstructed` always 0)
  in our computation: $\epsilon_{D^*} = \epsilon_{\pi,s} \cdot \epsilon_{D^0}$

Comments - plots

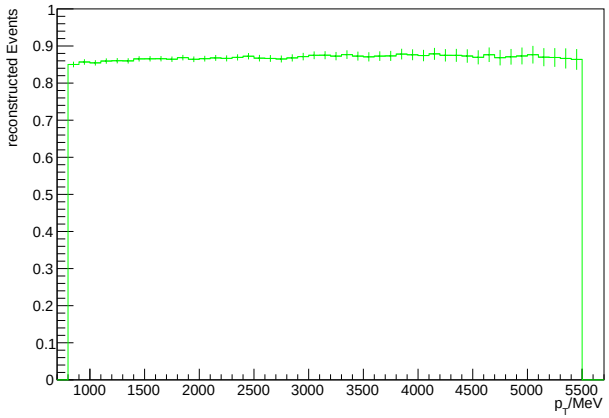
- structure of $\epsilon(\phi)$ probably due to rectangular detector shape
- peak in $\epsilon_{D^*}(\theta)$ within scope of error

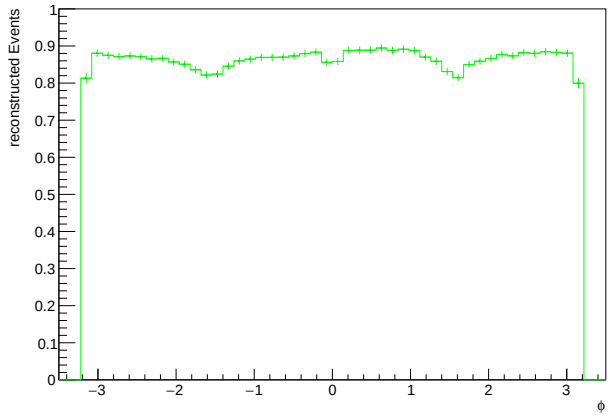
Total

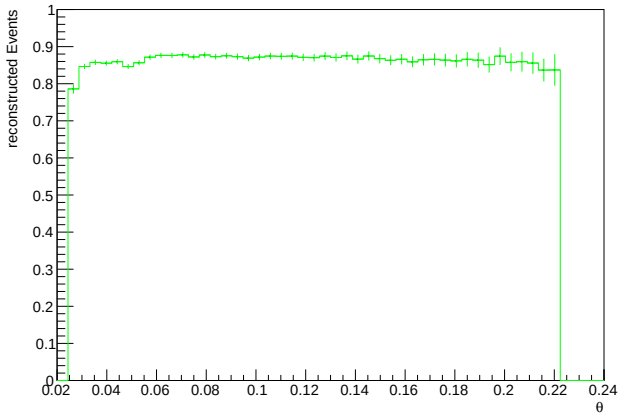
Efficiencies

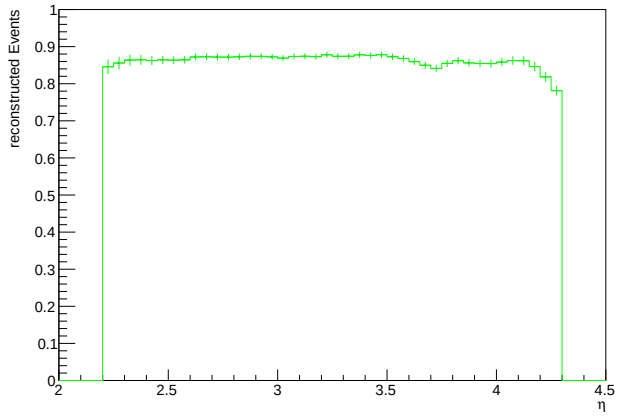
Polarity	ϵ_π	ϵ_K	$\epsilon_{\pi,s}$	ϵ_{D^0}	ϵ_{D^*}
UP	86.61 ± 0.04	84.65 ± 0.04	76.61 ± 0.05	73.33 ± 0.05	56.26 ± 0.06
DOWN	86.61 ± 0.04	84.67 ± 0.05	76.54 ± 0.06	73.33 ± 0.06	56.23 ± 0.07

π-efficiency

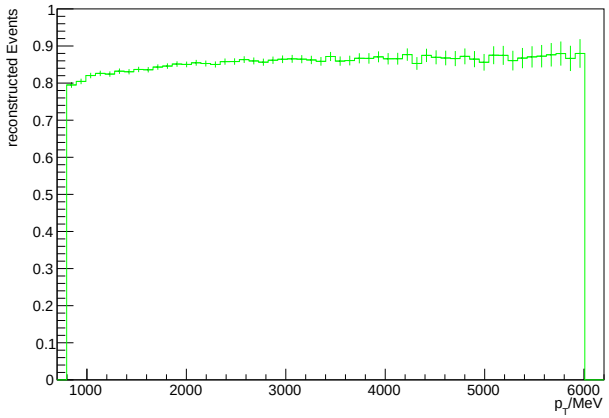


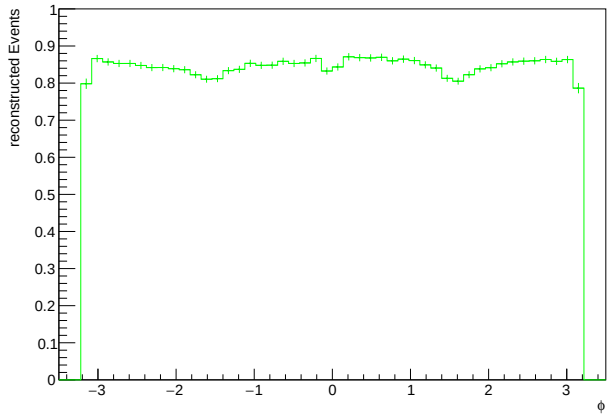


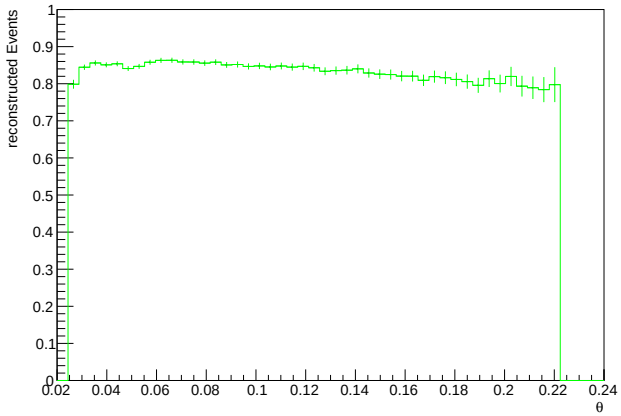


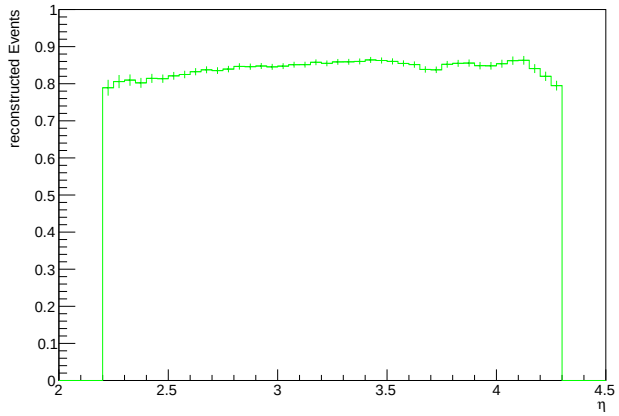


K-efficiency

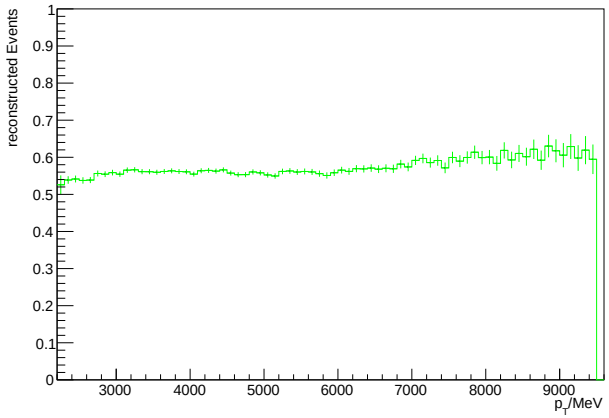


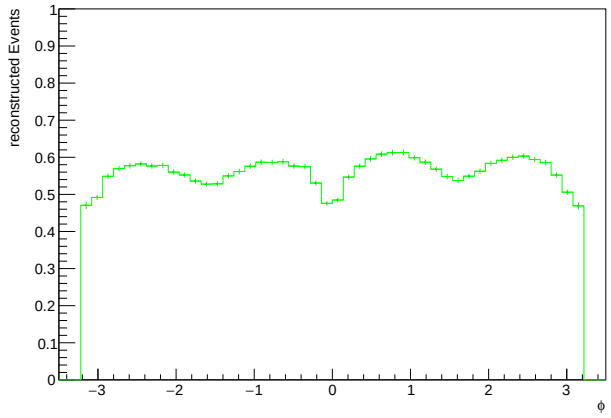


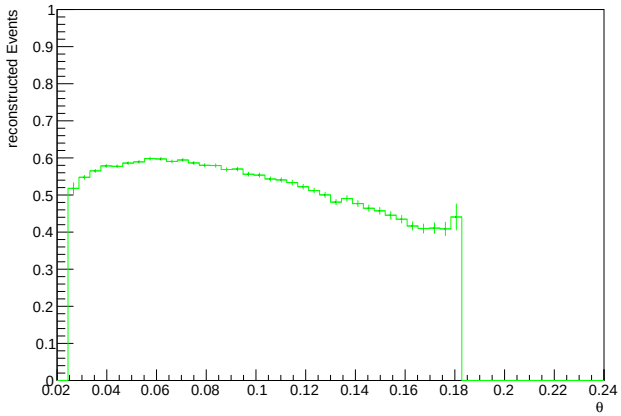


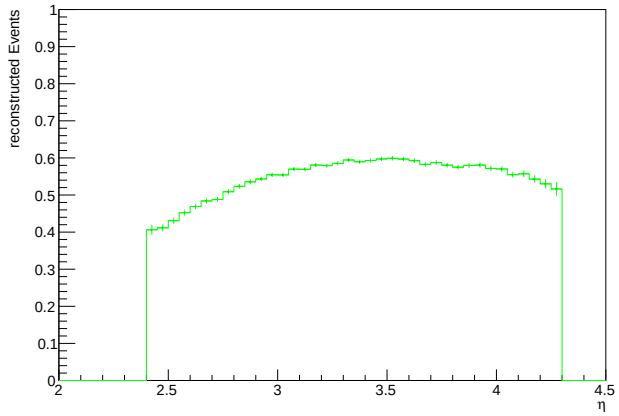


soft π-efficiency

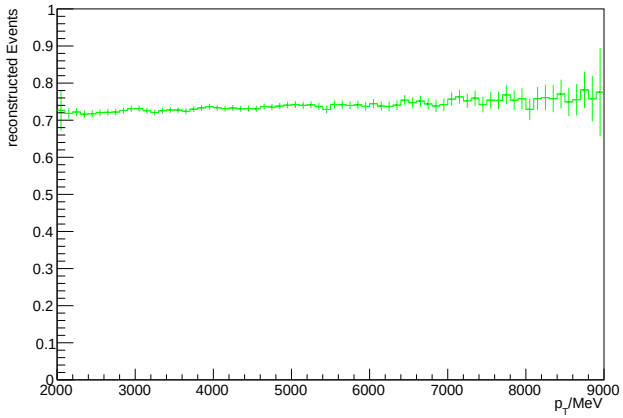


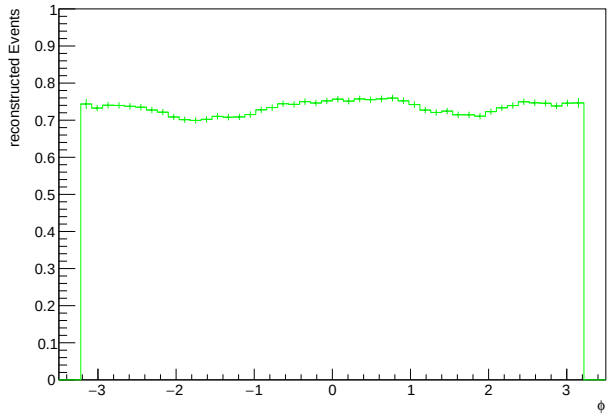


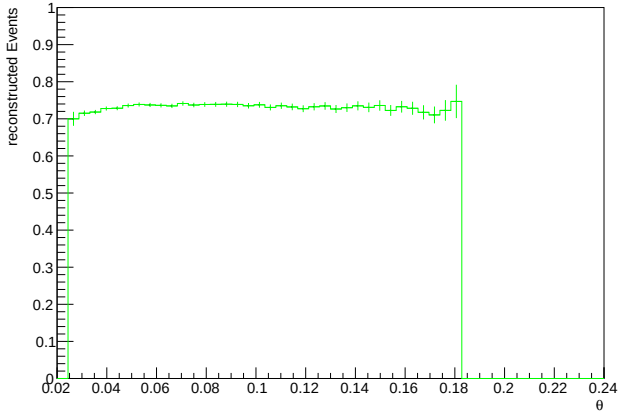


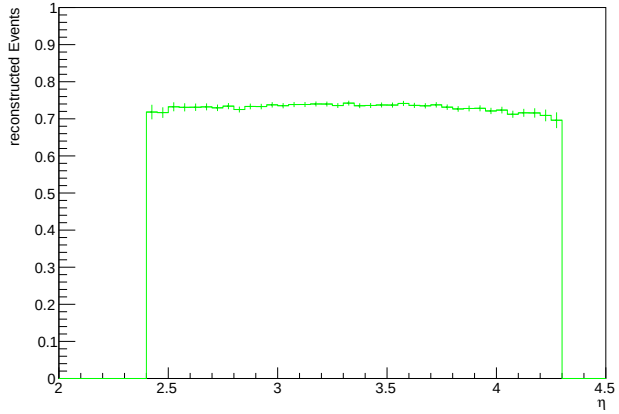


D^0-efficiency

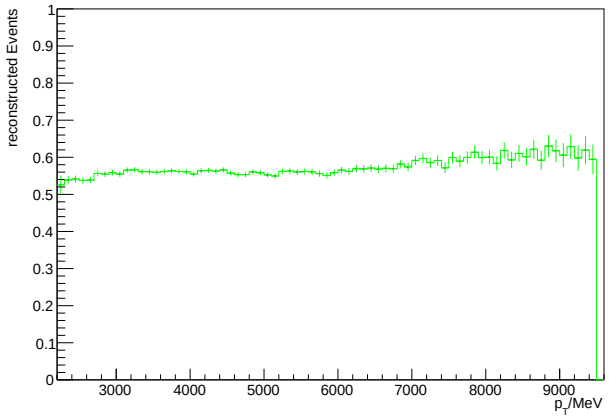


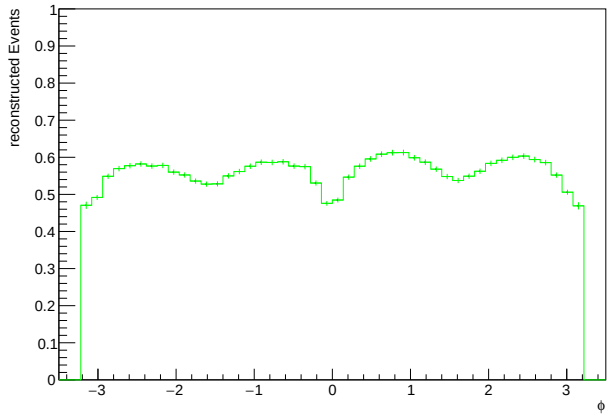


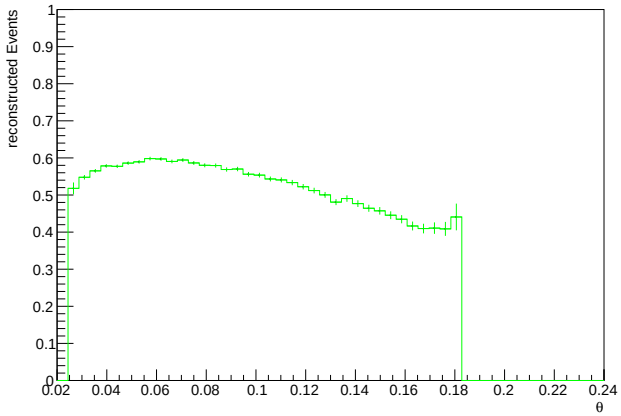


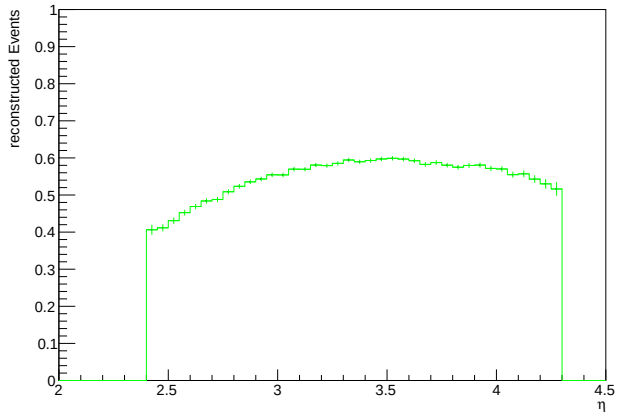


D^*-efficiency









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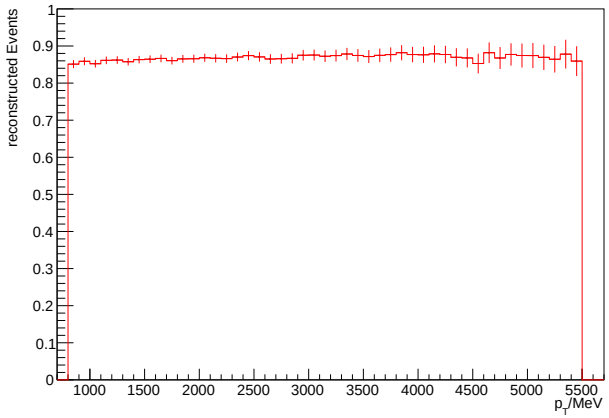
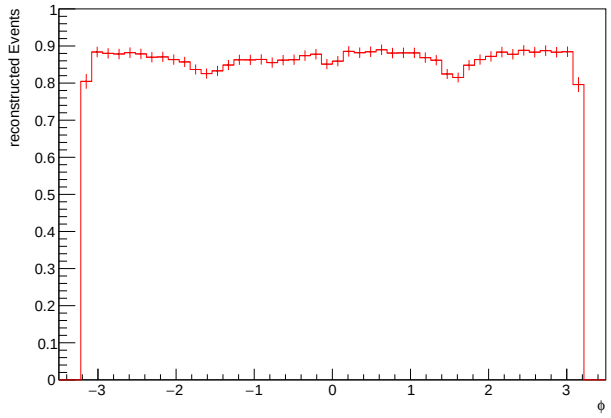
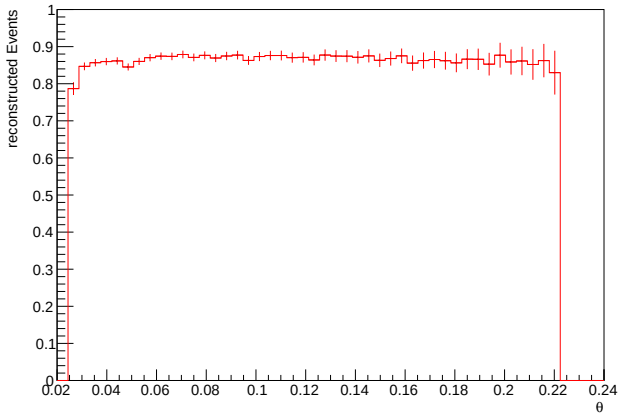
Efficiencies

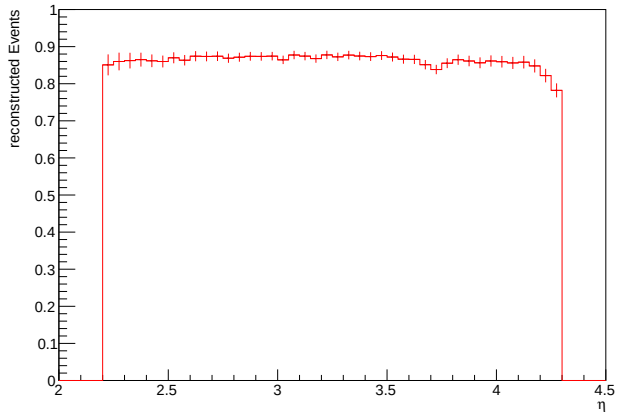
Polarity	ϵ_π	ϵ_K	$\epsilon_{\pi,s}$	ϵ_{D^0}	ϵ_{D^*}
UP	86.63 ± 0.06	85.01 ± 0.06	76.26 ± 0.07	73.00 ± 0.07	55.71 ± 0.08
DOWN	86.57 ± 0.06	85.38 ± 0.07	76.71 ± 0.08	72.92 ± 0.08	56.09 ± 0.09

π-efficiency

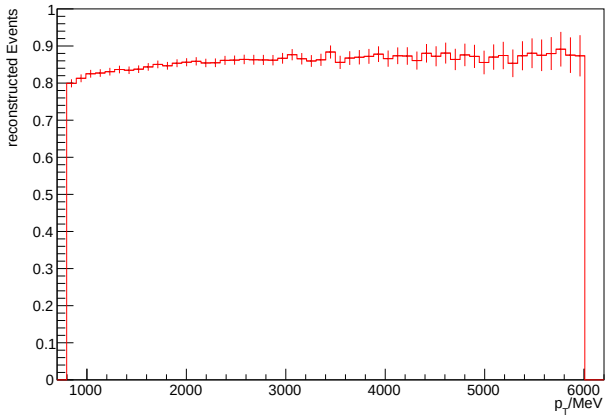


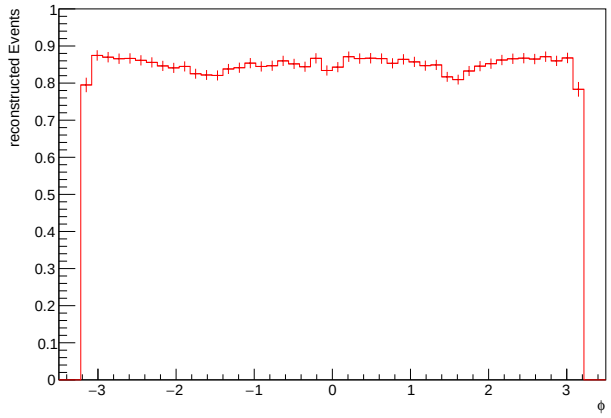


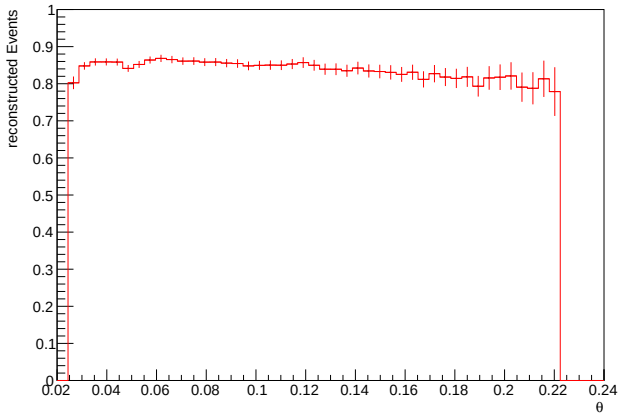


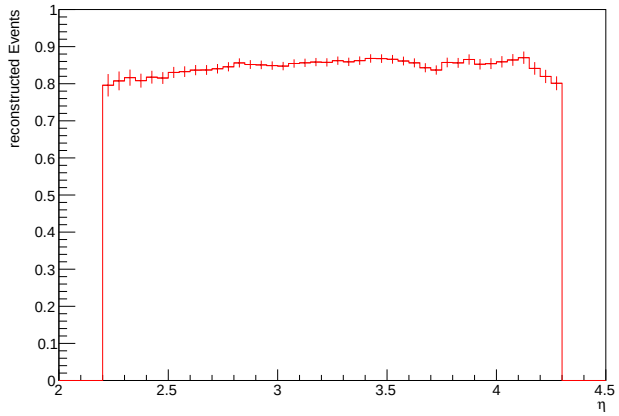


K-efficiency

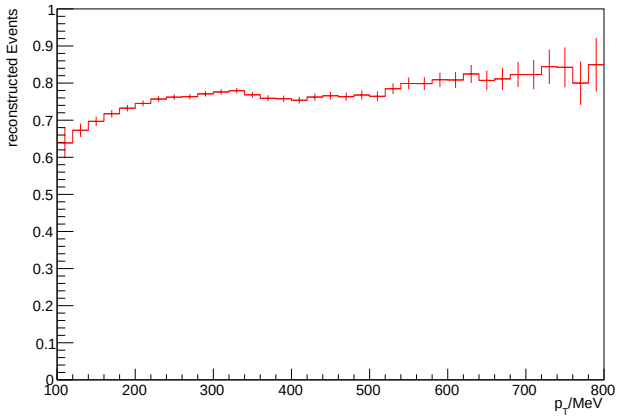


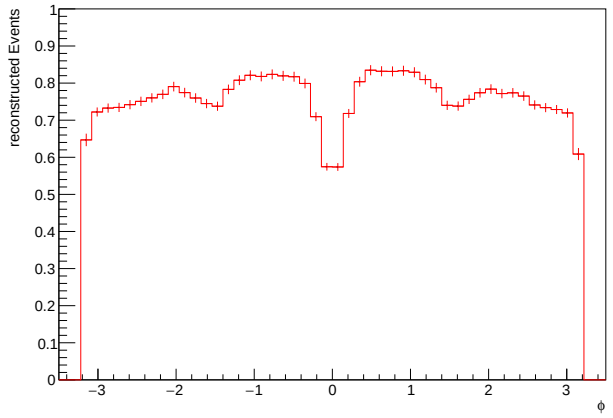


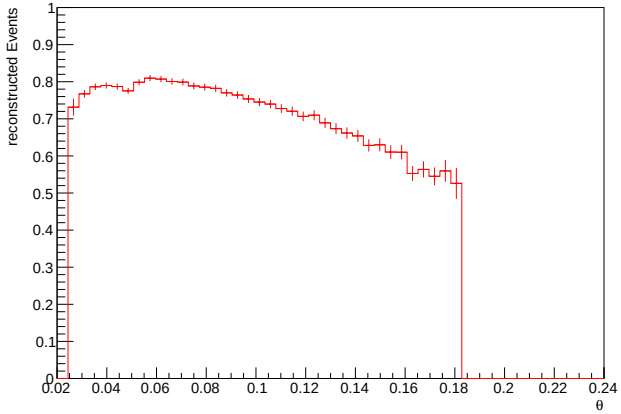


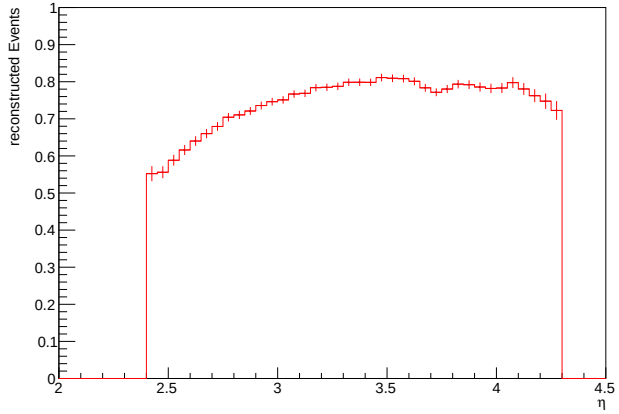


soft π-efficiency

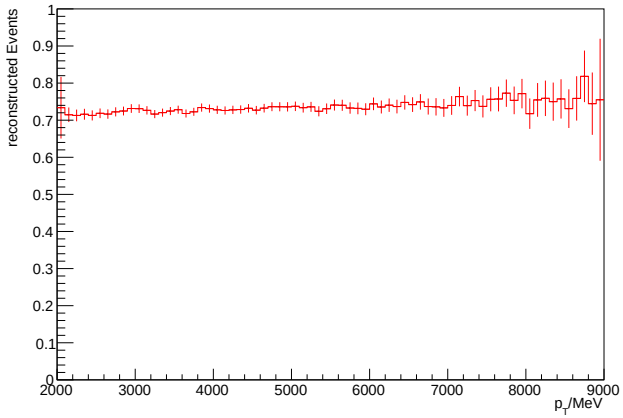


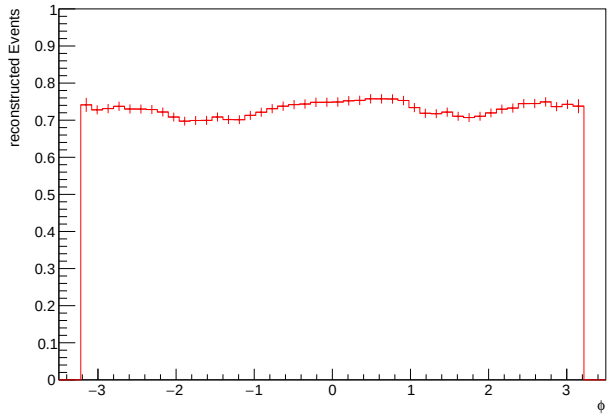


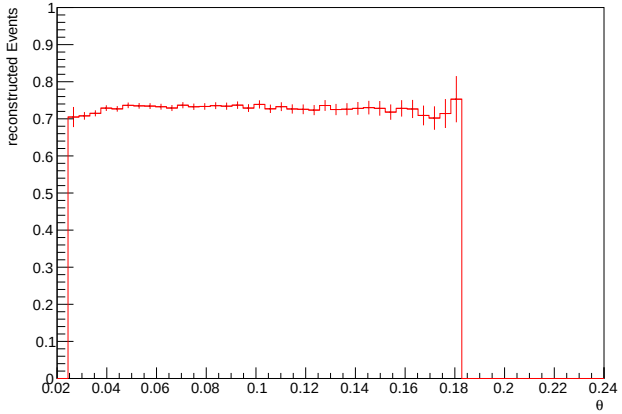


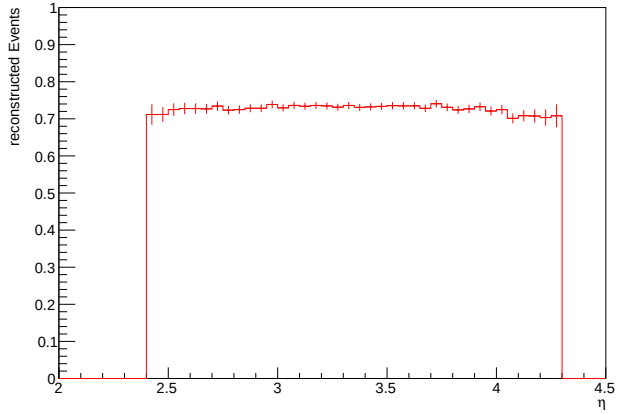


D^0-efficiency









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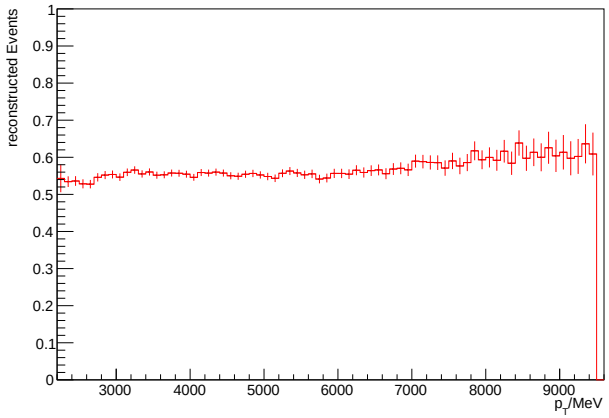

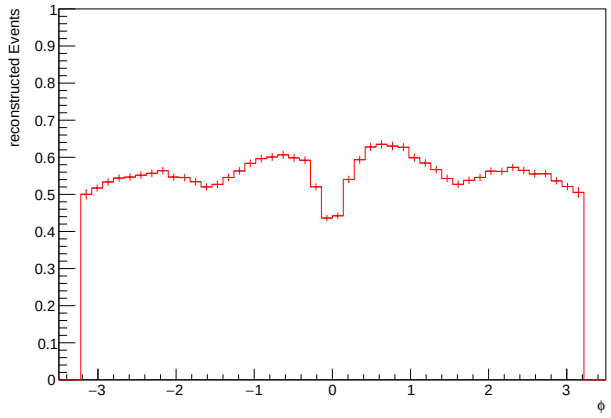

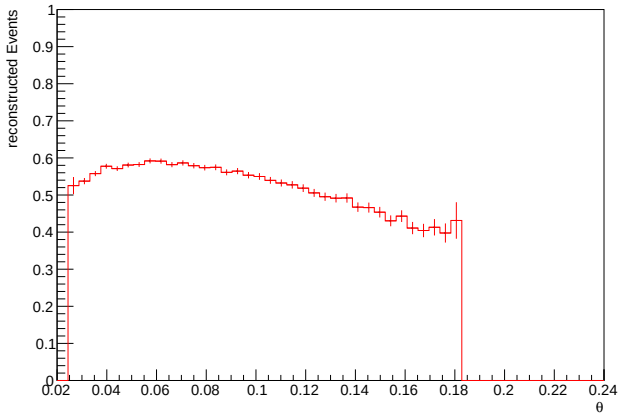

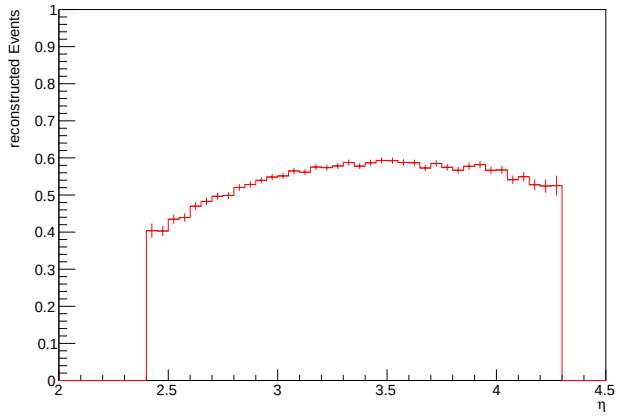

Charge: -

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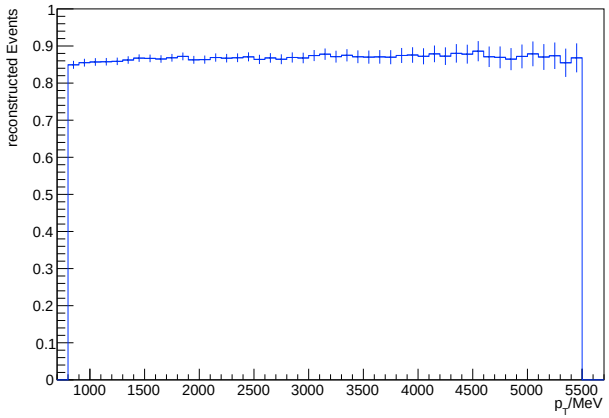
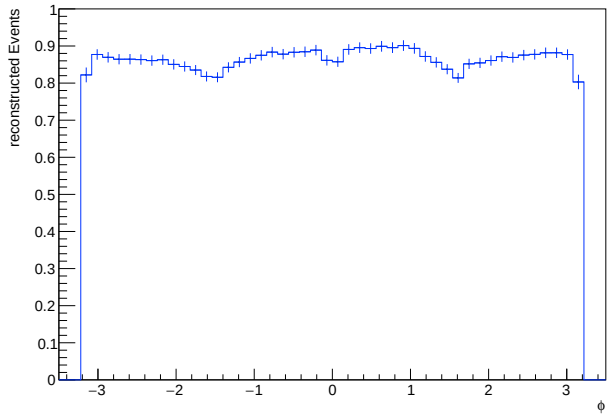
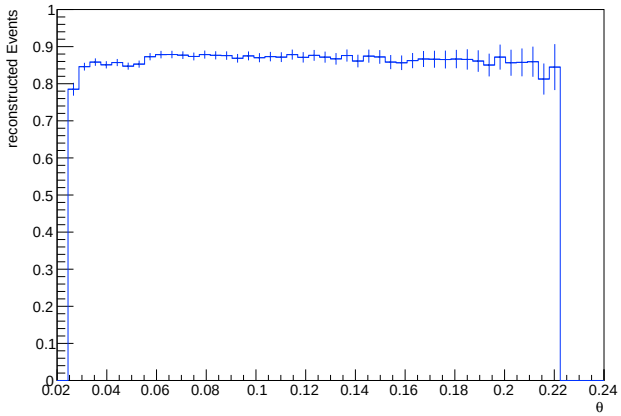
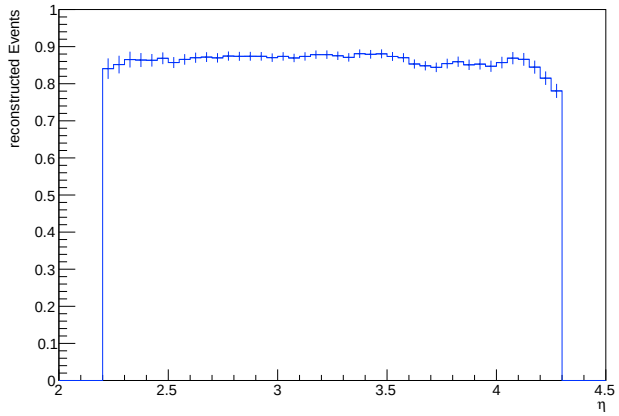
π-efficiency

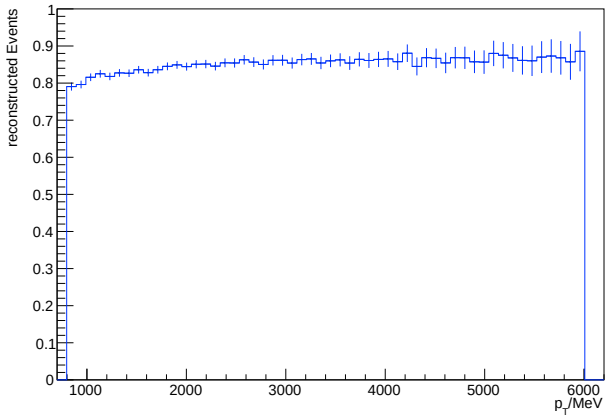


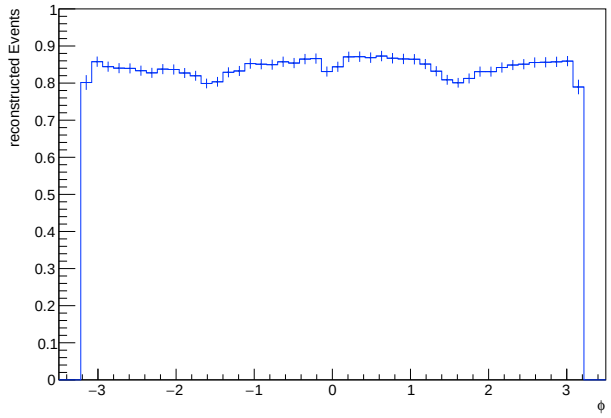


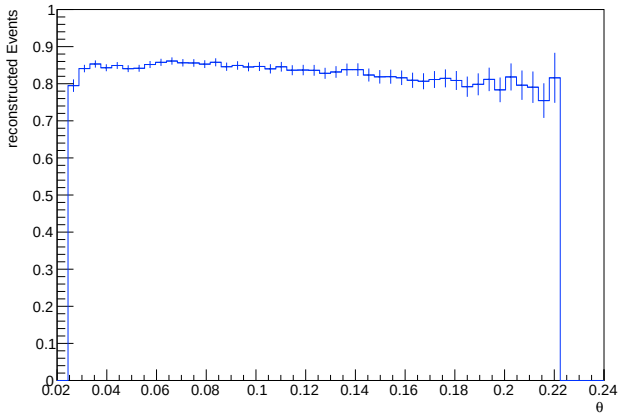


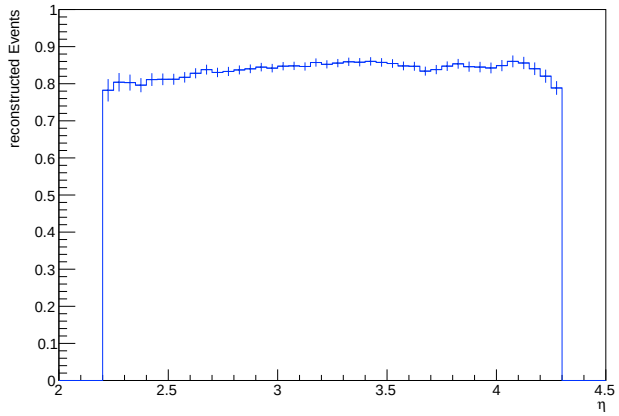


K-efficiency

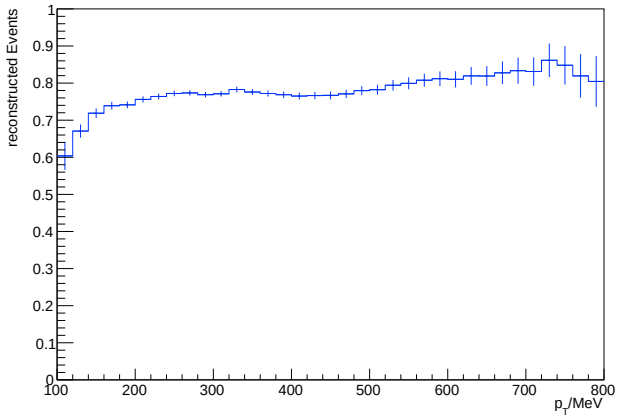


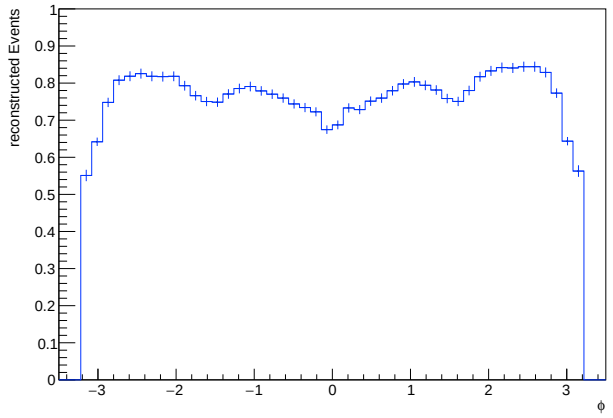


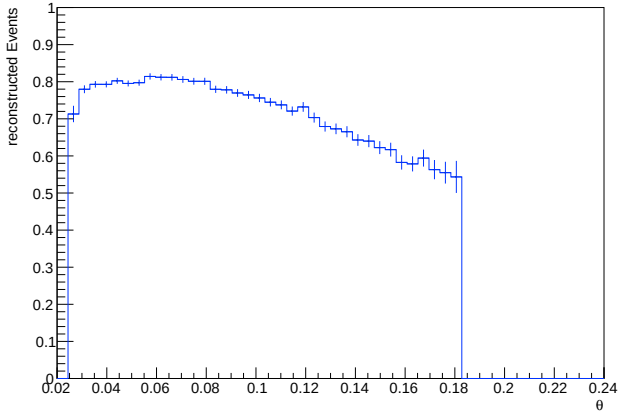


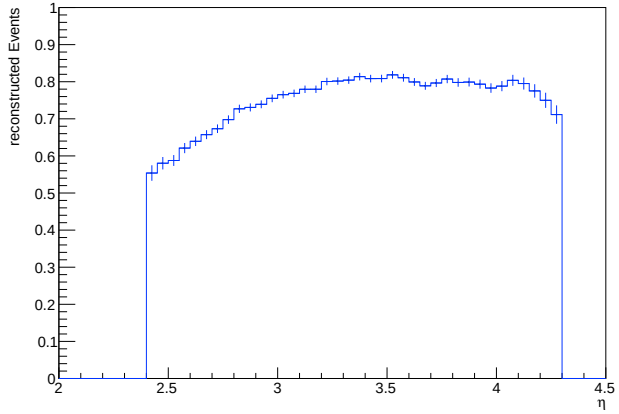


soft π-efficiency

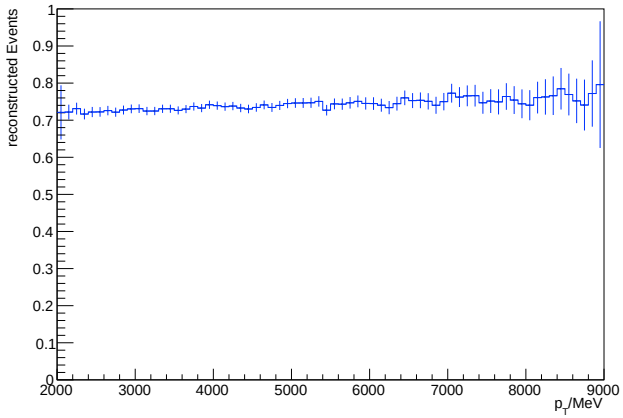


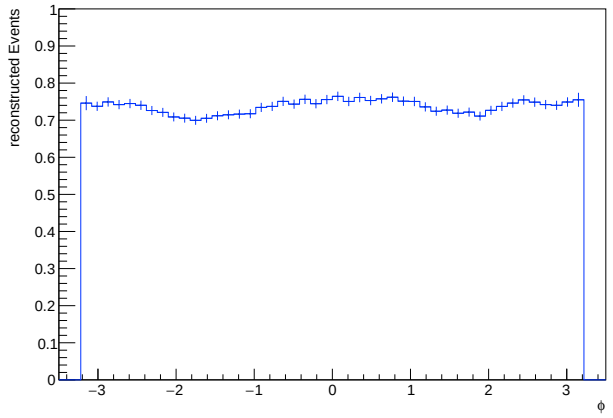


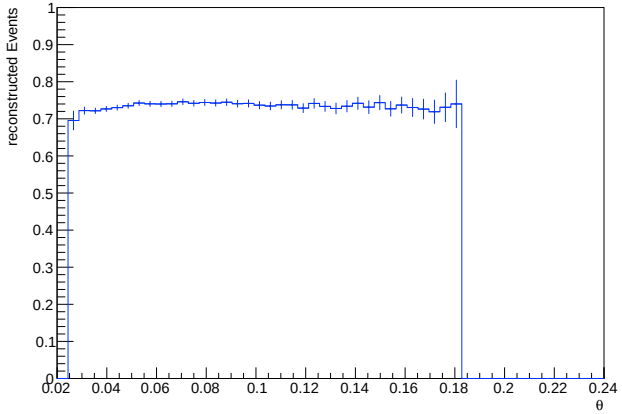


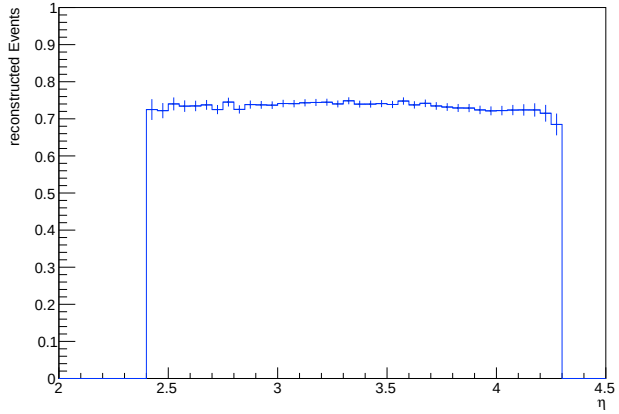


D^0-efficiency

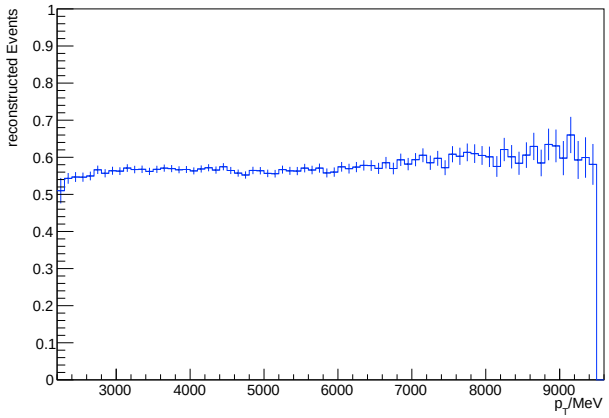


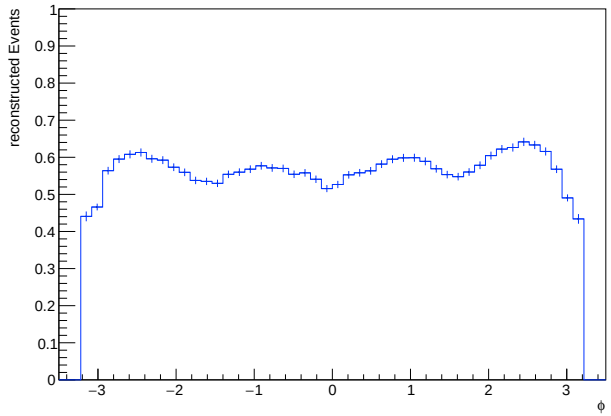


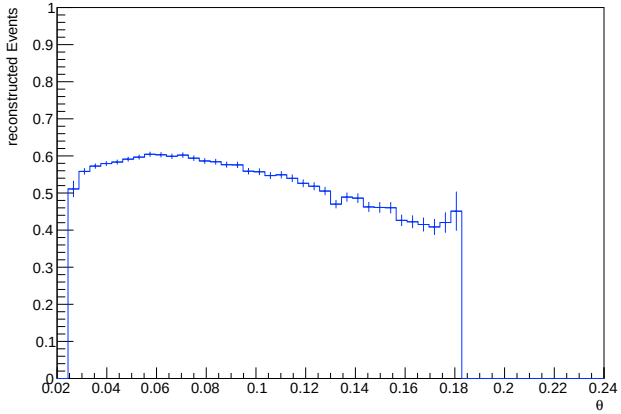


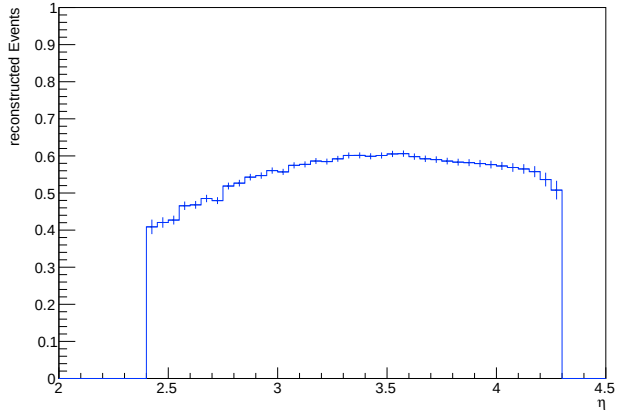


D^*-efficiency







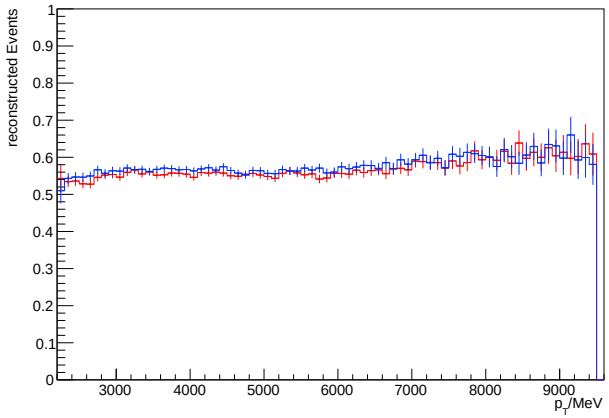


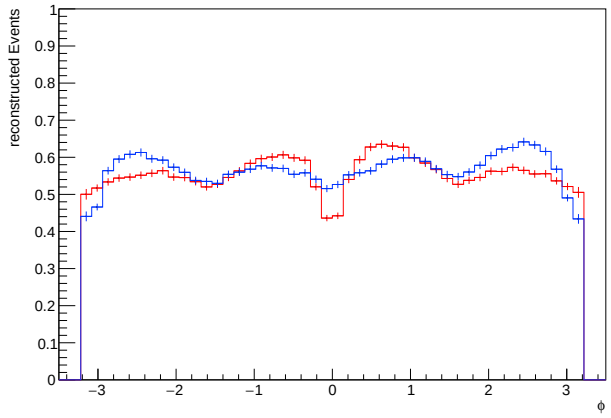
Deviation

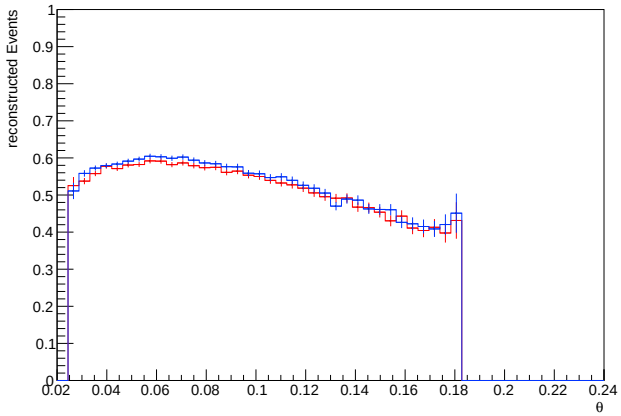
Table: The deviation $\frac{\epsilon_+ - \epsilon_-}{\epsilon_+ + \epsilon_-} / 10^{-3}$

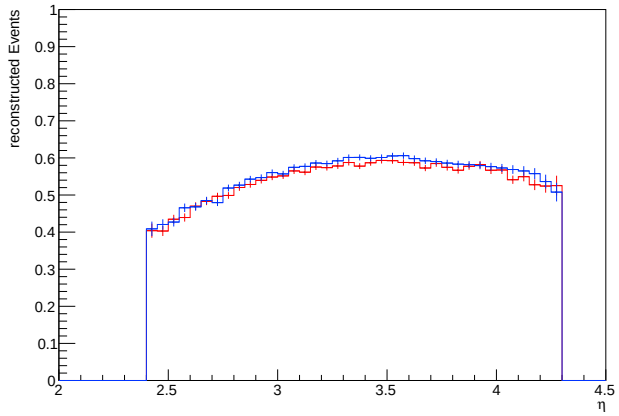
Polarity	π	K	$soft\pi$	D^0	D^*
UP	0.2 ± 0.8	4.0 ± 0.8	-5.0 ± 1.0	-4.0 ± 1.0	-9.8 ± 1.1
DOWN	-0.4 ± 0.9	8.0 ± 0.9	2.3 ± 1.1	-6.0 ± 1.2	-2.5 ± 1.3

Comparison of different charges - D^*

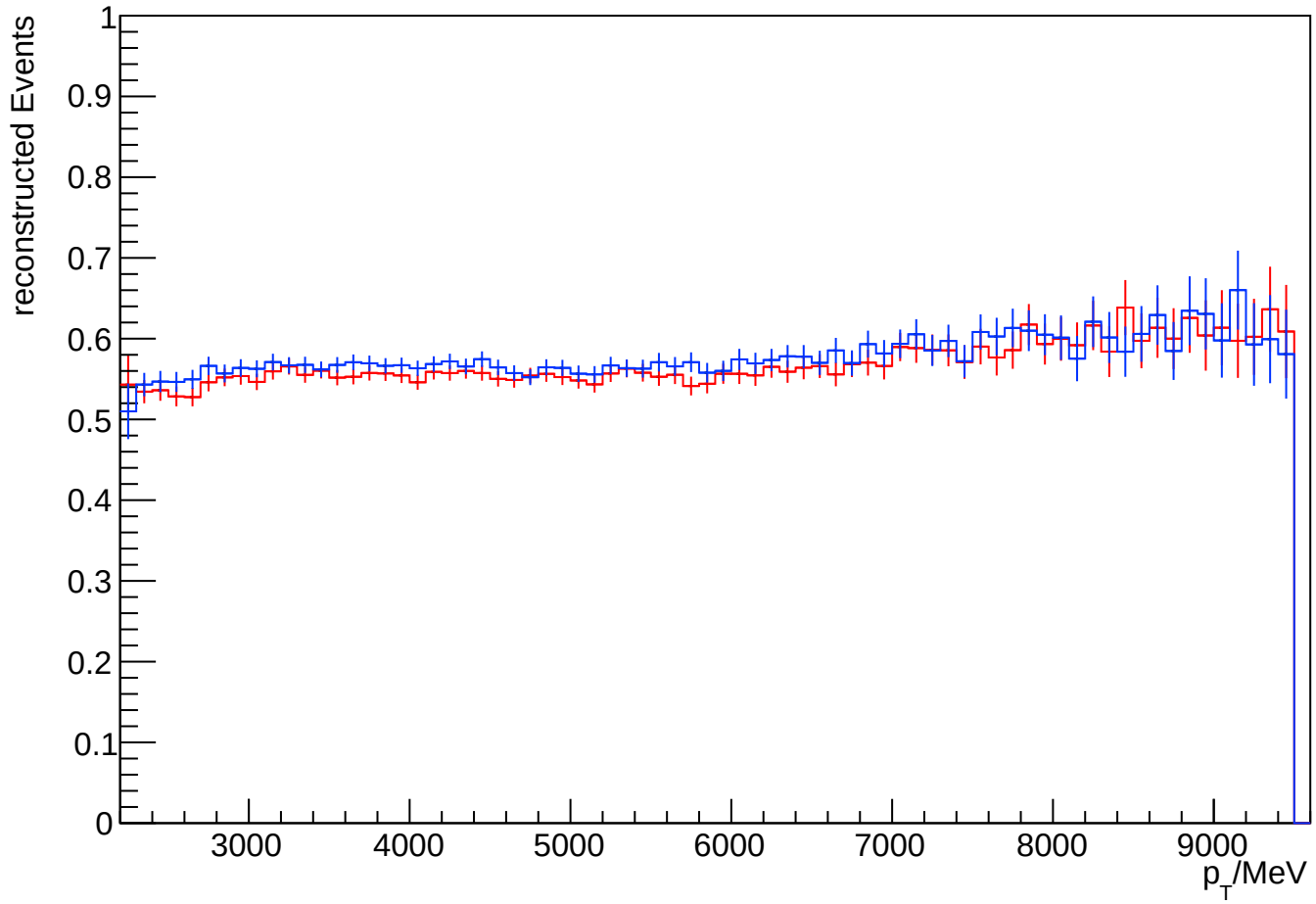




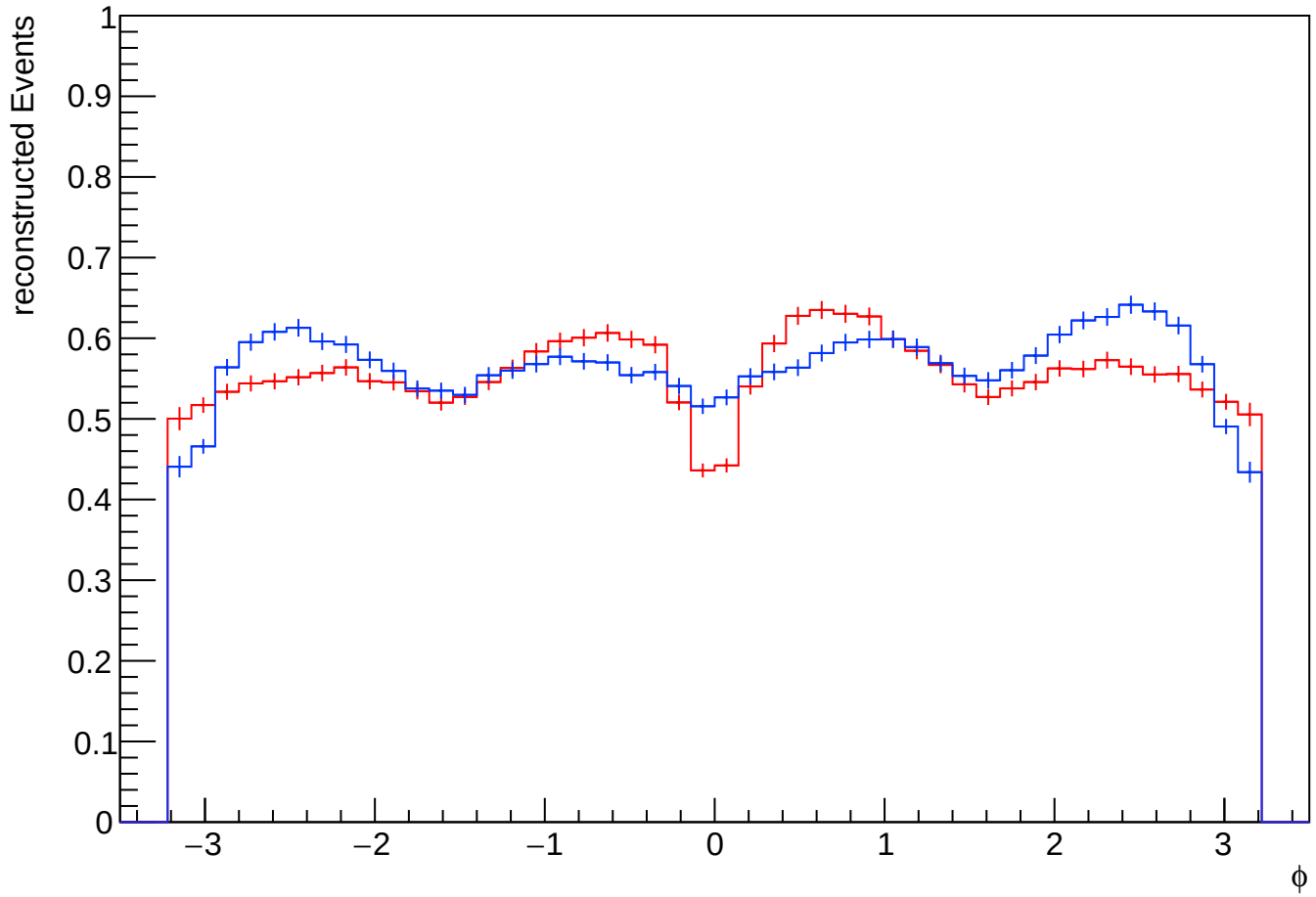




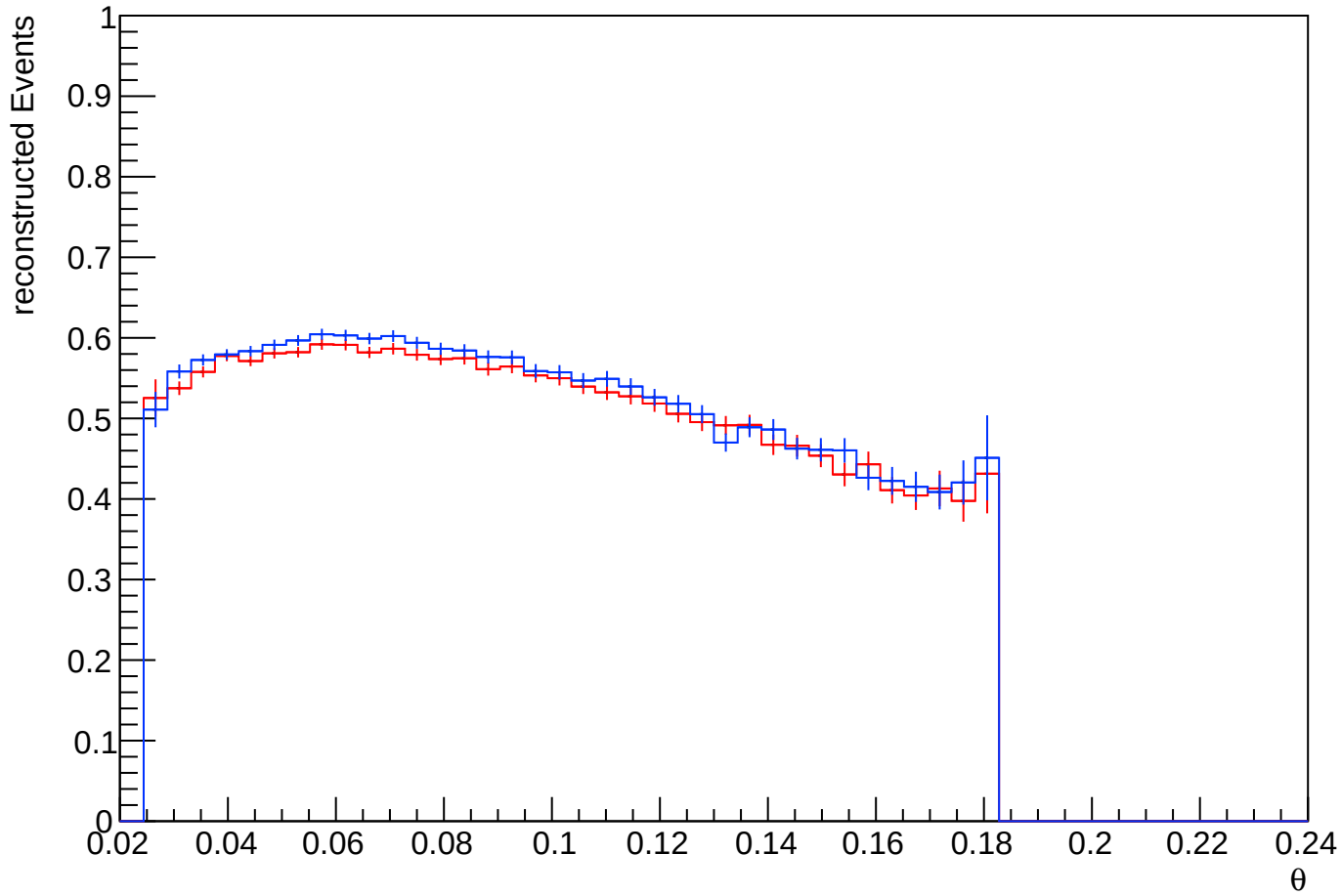
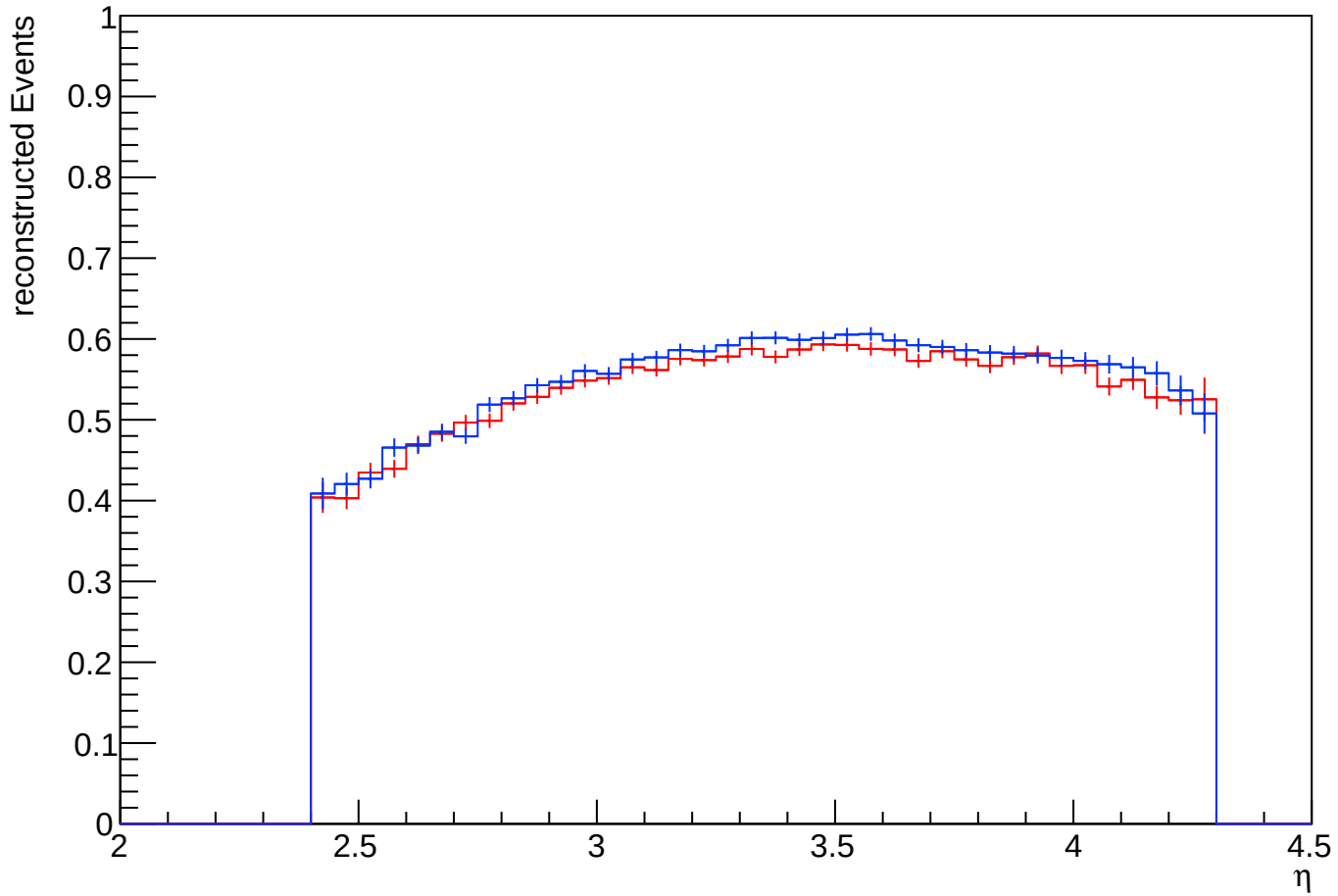
Comparison - $D^* p_T$



Comparison - $D^*\phi$



Comparison - $D^*\theta$



Comparison - $D^*\eta$