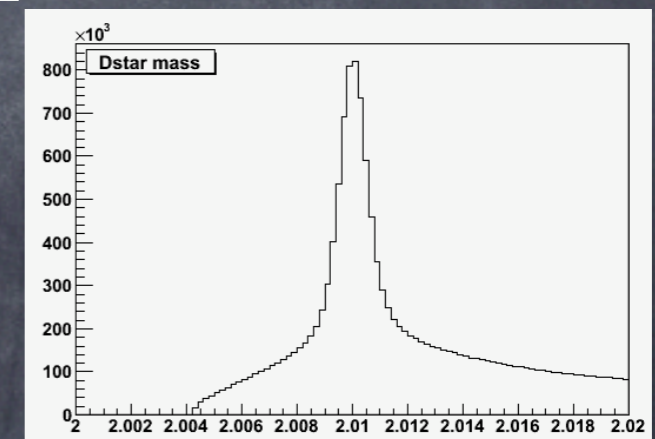
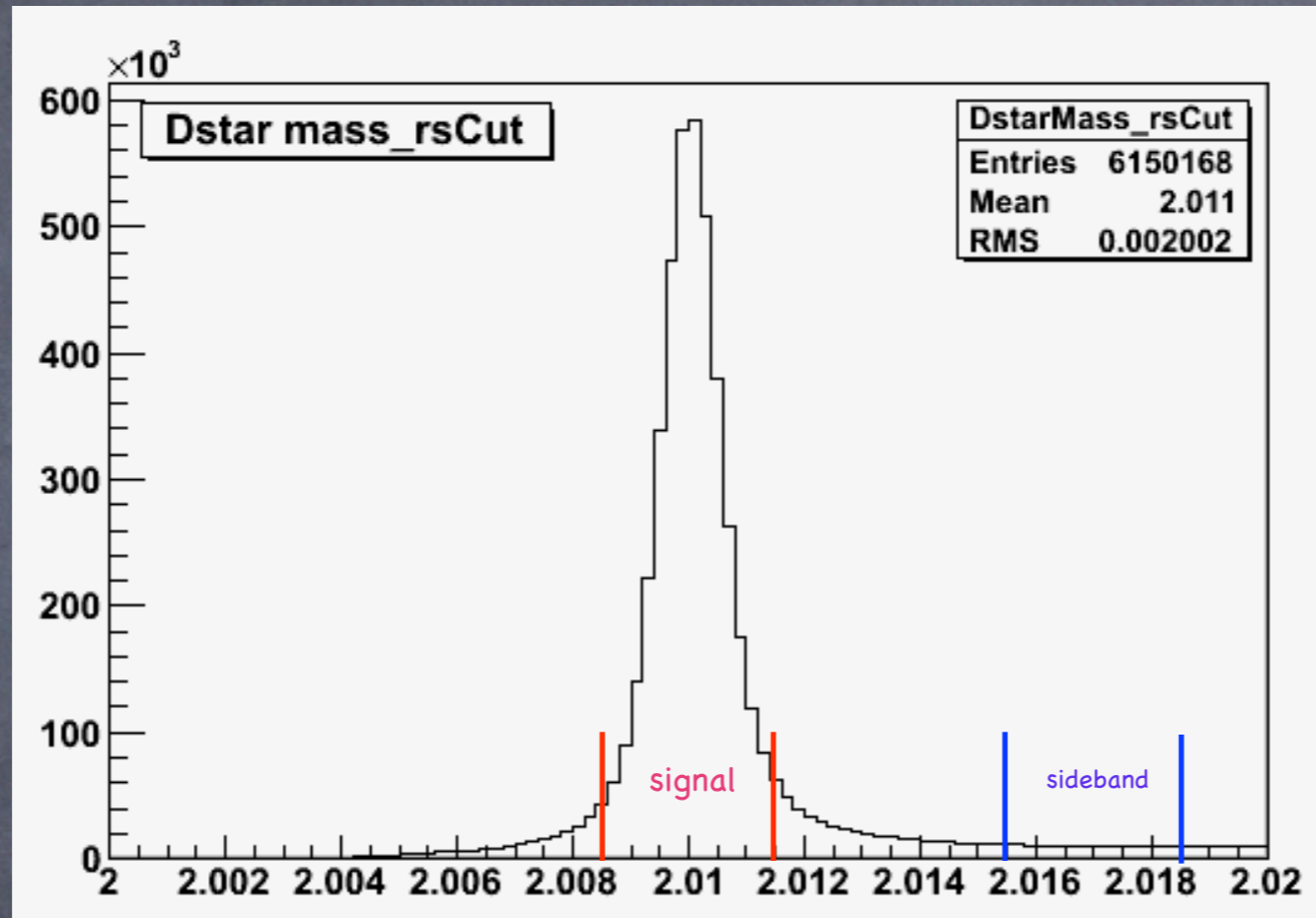
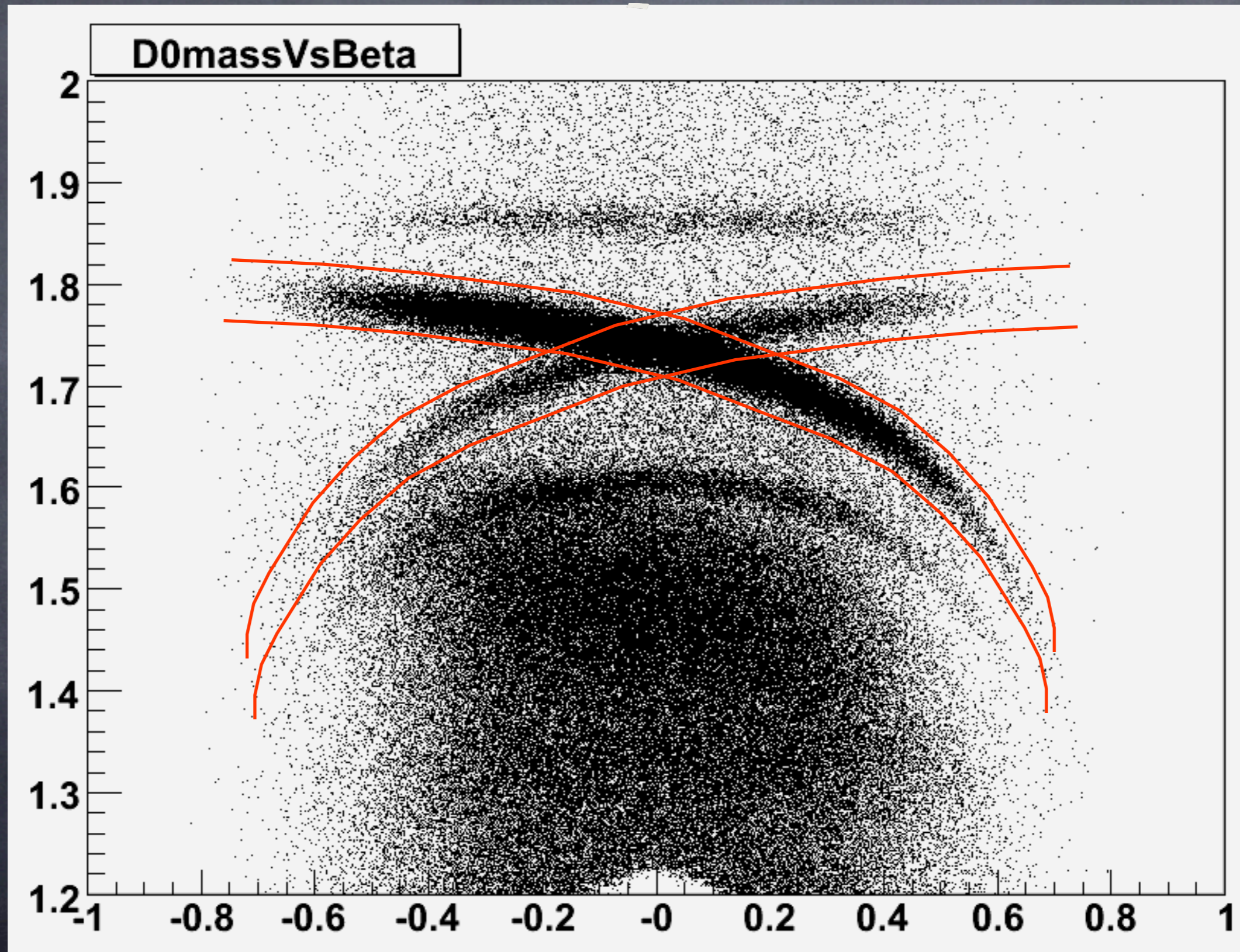


# D\* signal and sideband



cut on  $M_{K\pi}$

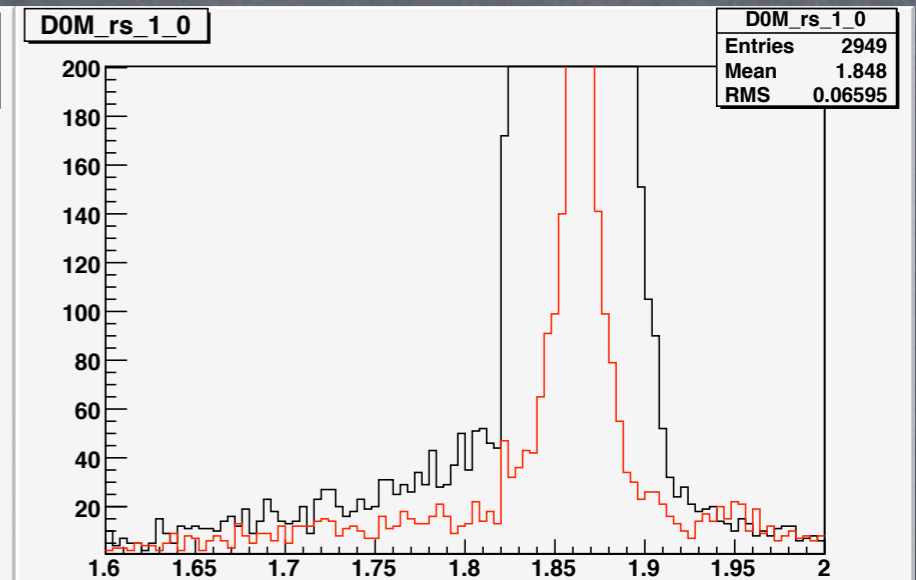
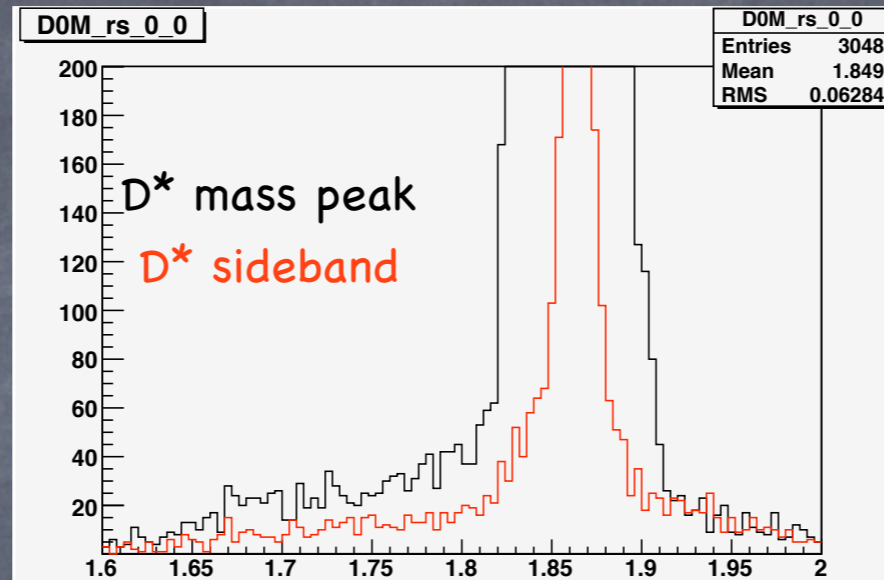


# D<sup>0</sup> mass rs vs. ct

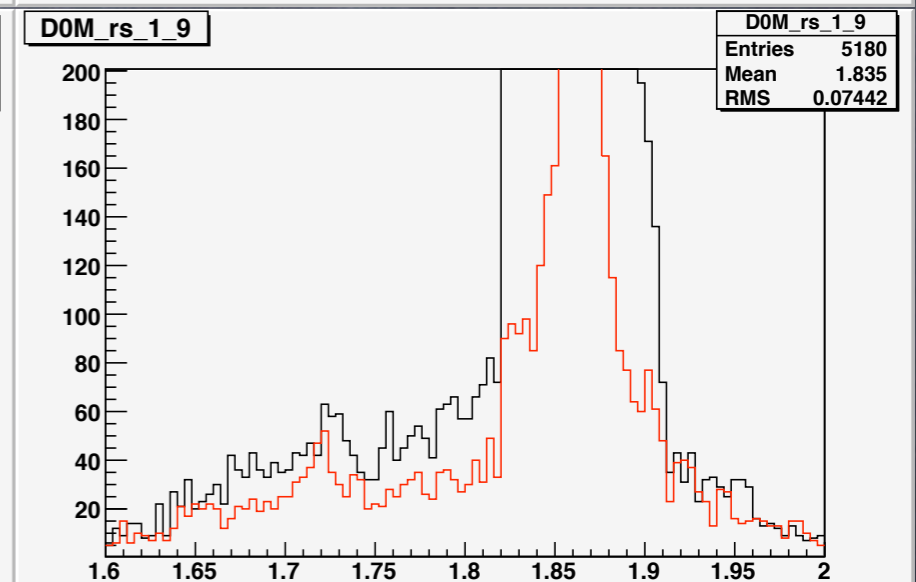
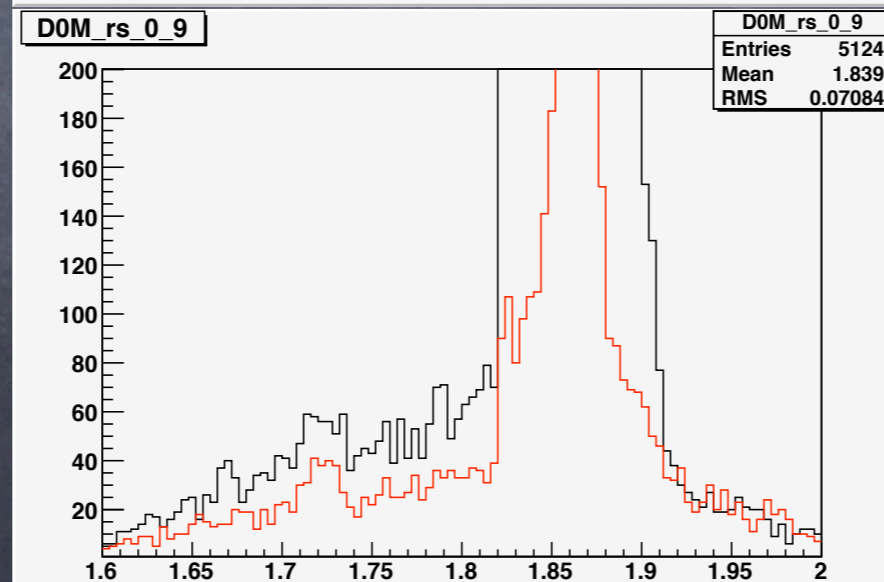
D<sup>0</sup>bar

D<sup>0</sup>

300  $\mu\text{m}$  < ct < 316  $\mu\text{m}$



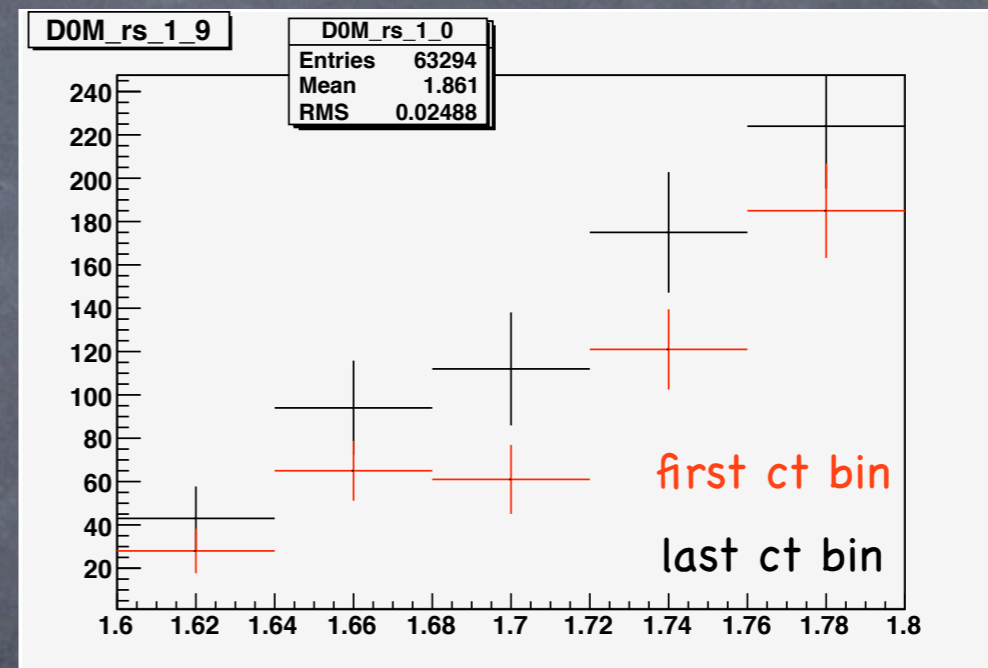
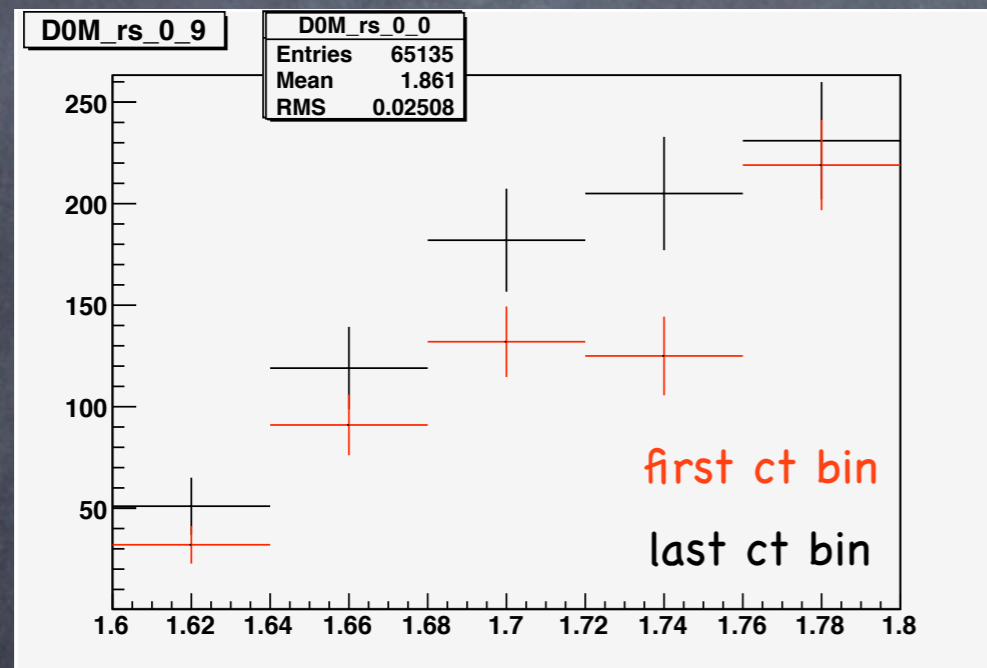
ct > 611  $\mu\text{m}$



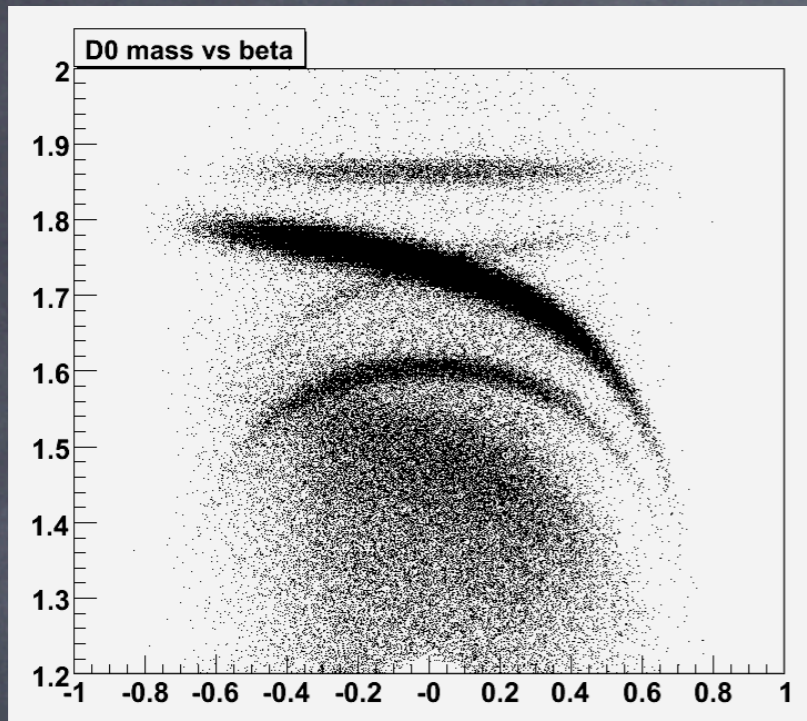
# D mass rs tail - D\* sideband subtracted

$D^0\bar{}$

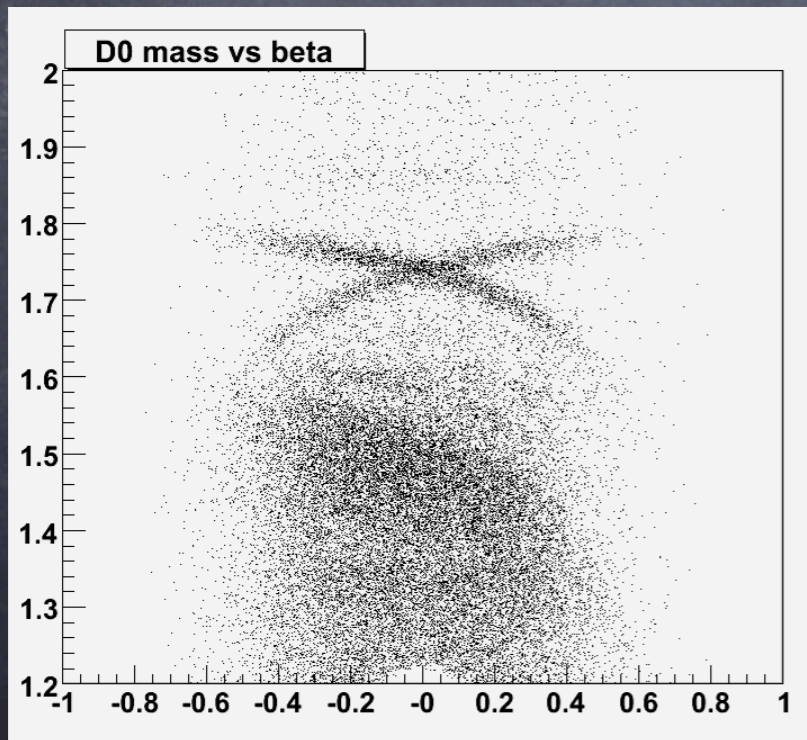
$D^0$



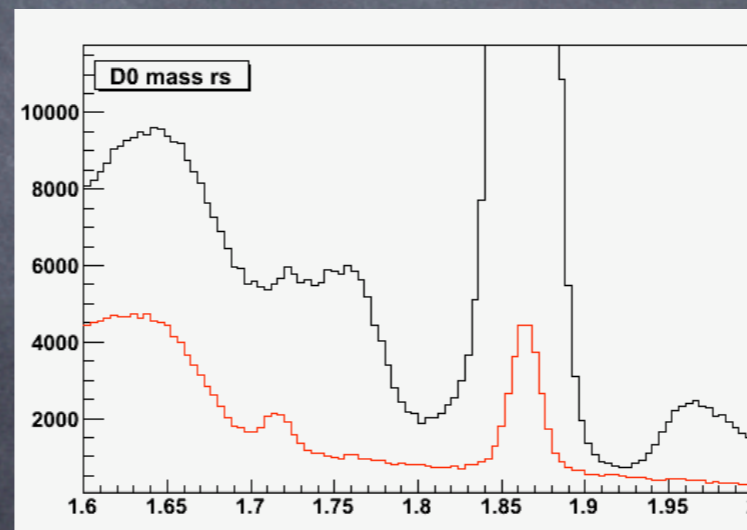
# D\* sideband composition



D\* peak

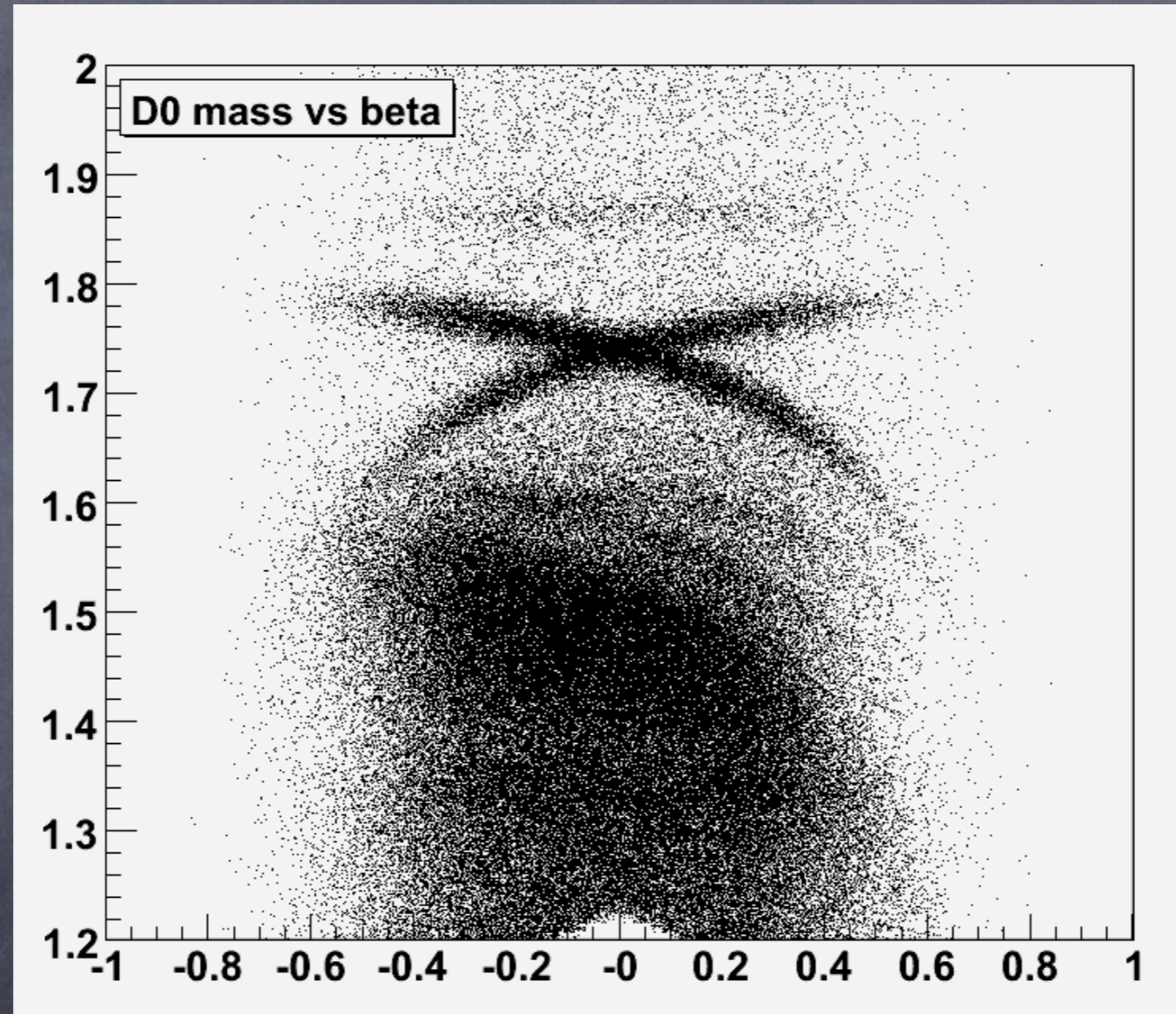


same statistics

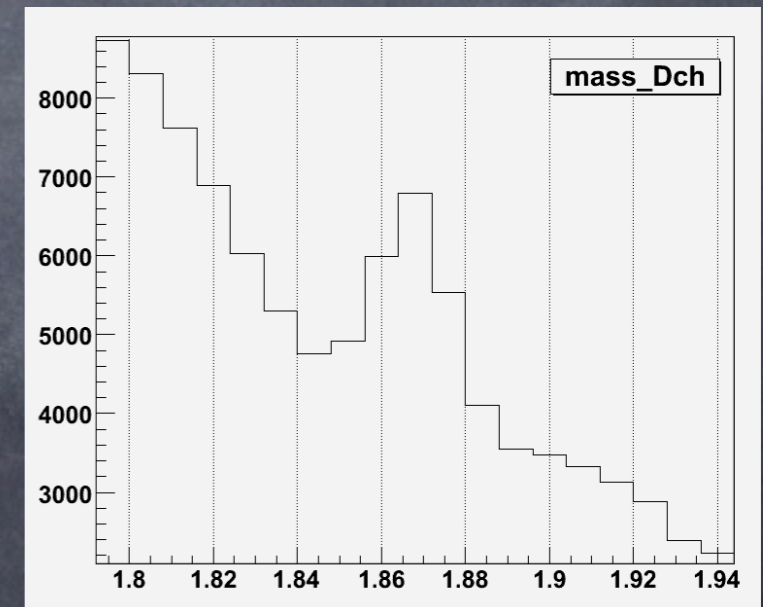
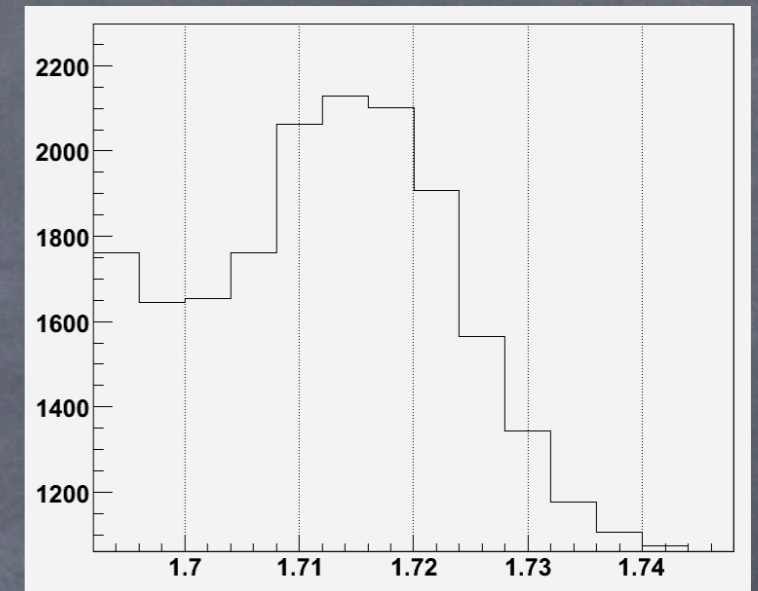
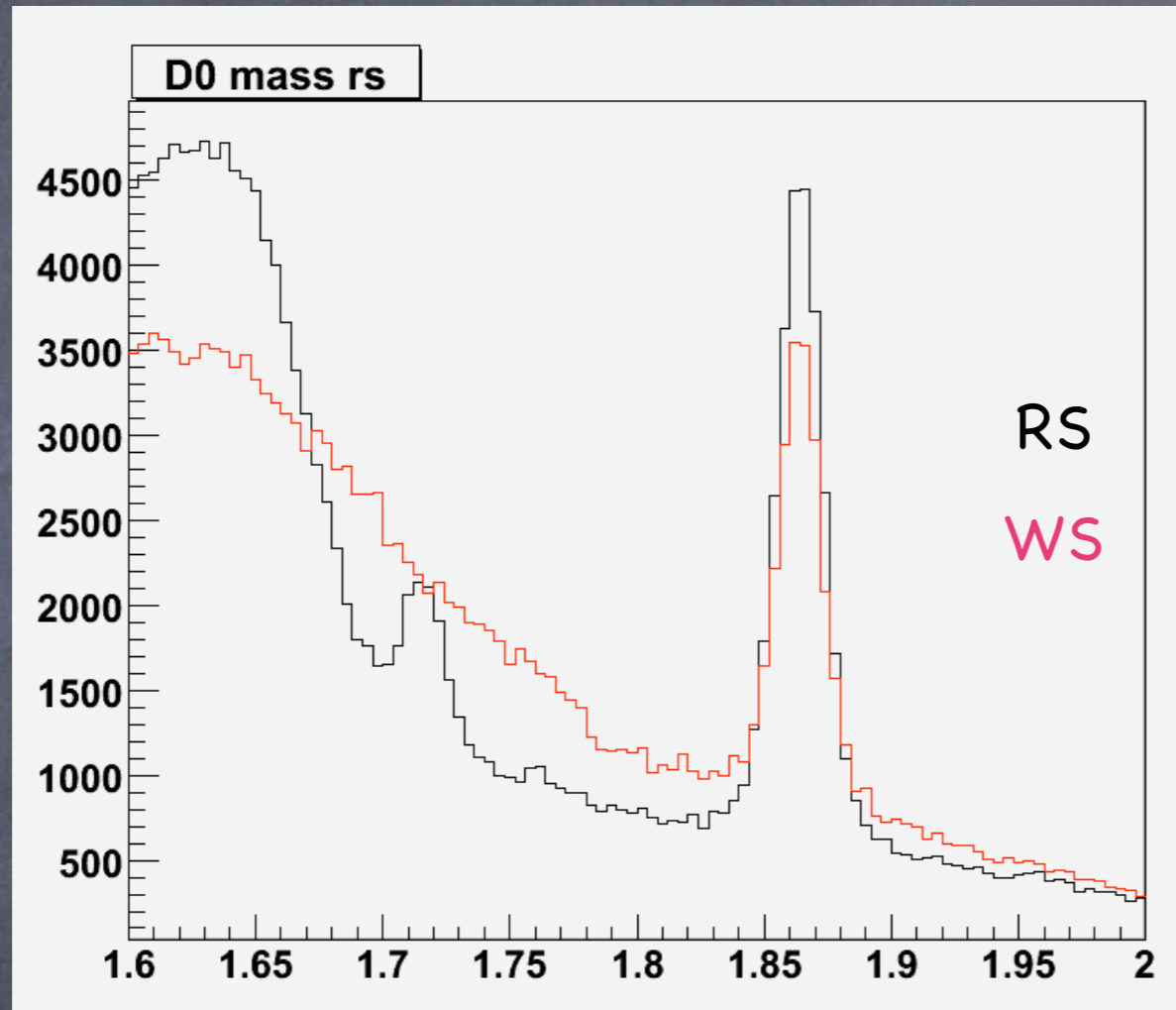


sideband

# D\* sideband composition



# D\* sideband composition



↑  
?

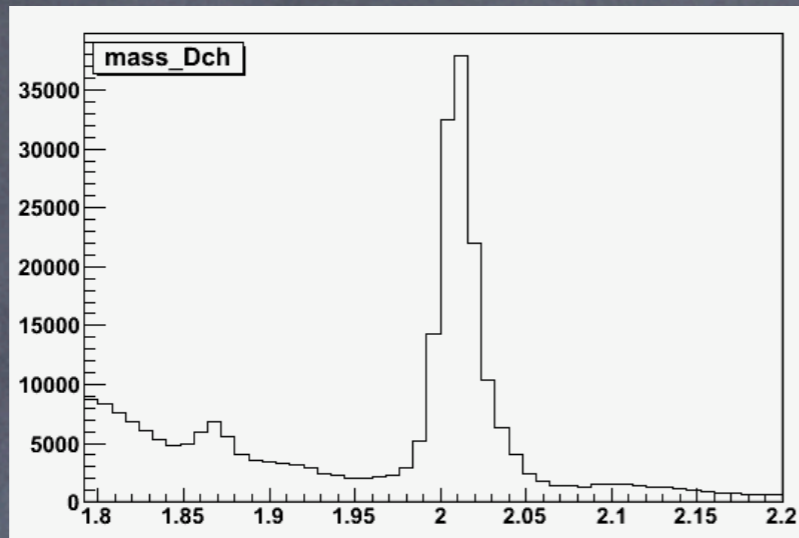
PDG:

$K^*(1680)$   $m = 1717 \pm 27$  MeV

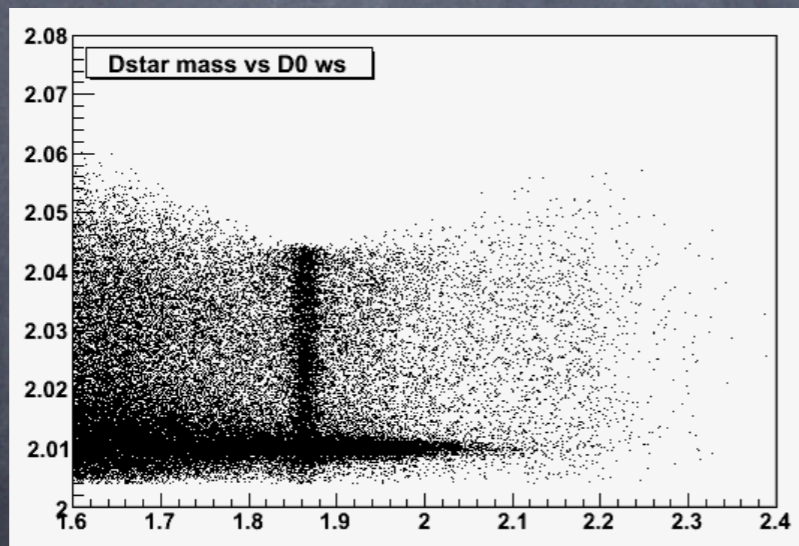
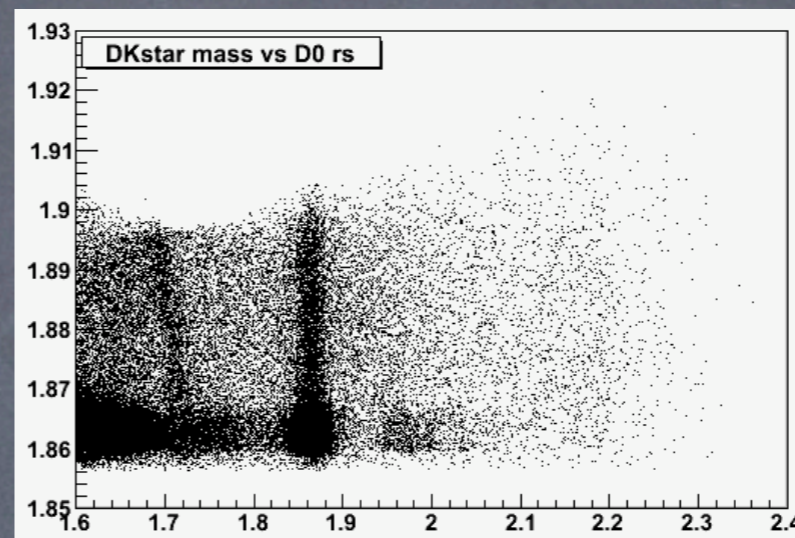
$D^+ \rightarrow K^*(1680) \pi^+$  BR =  $1.47 \pm 0.31\%$

# the $K^*$ mystery

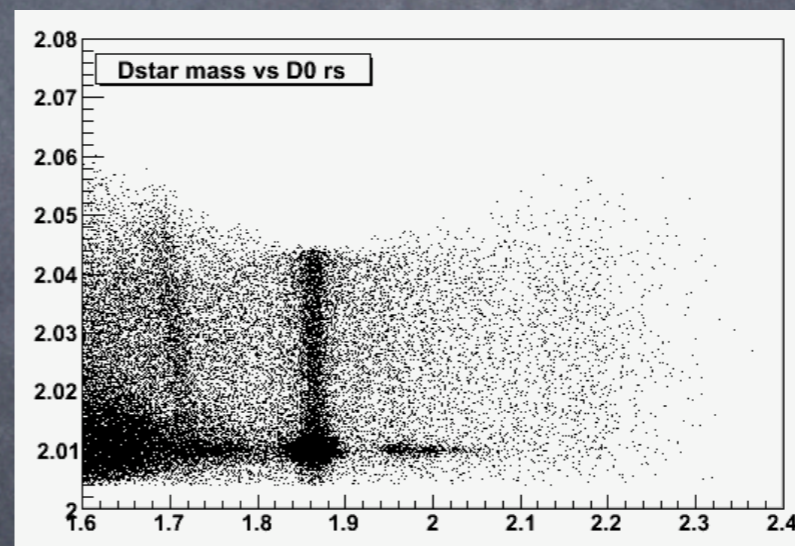
$\pi\pi k$  mass



$(K^*\pi)$  mass vs.  $D^0$  mass rs



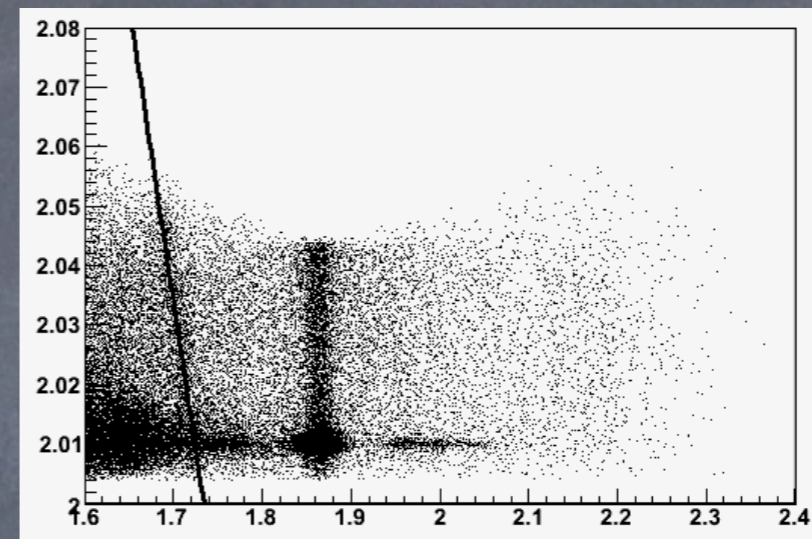
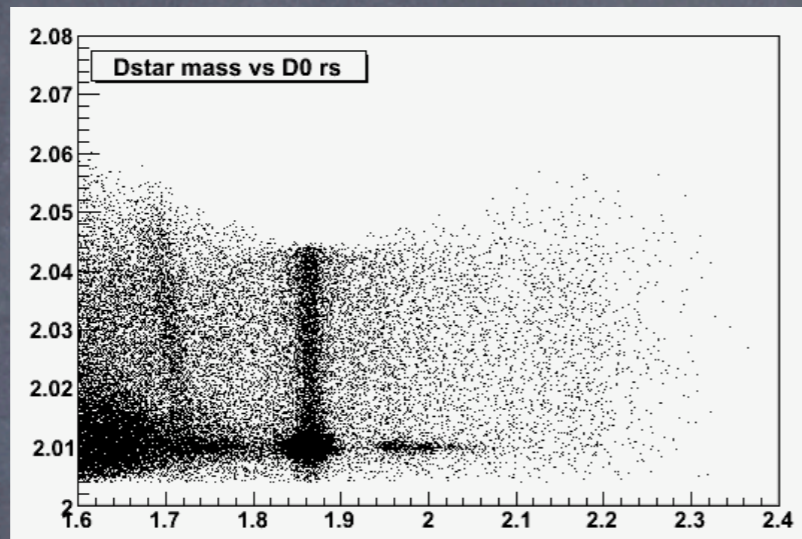
$D^*$  mass vs.  $D^0$  mass ws



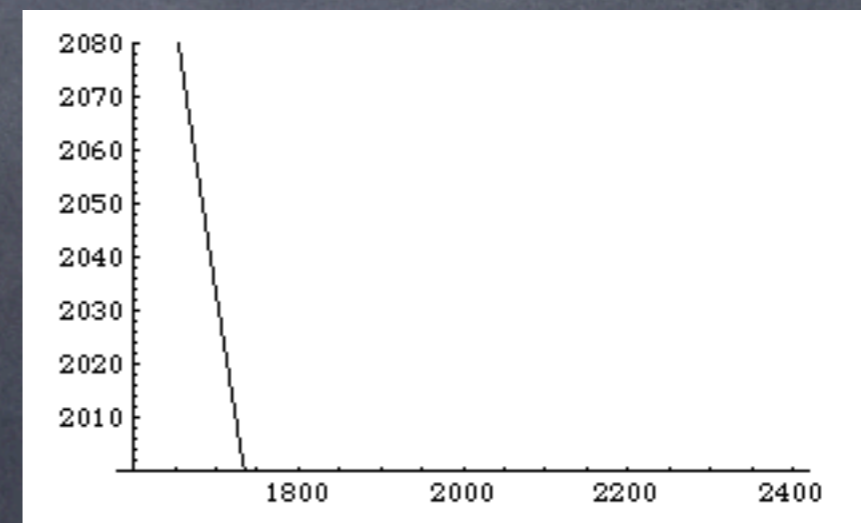
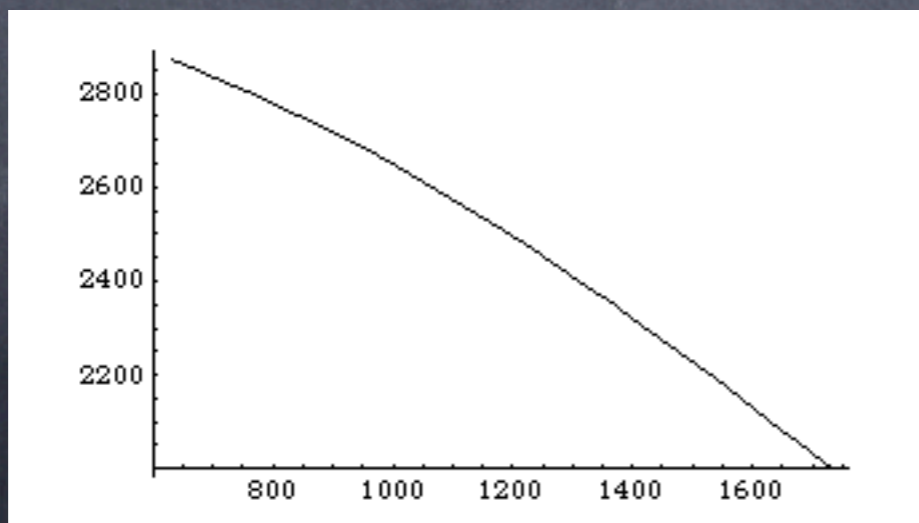
$D^*$  mass vs.  $D^0$  mass rs



# the "K\* mystery" solved:

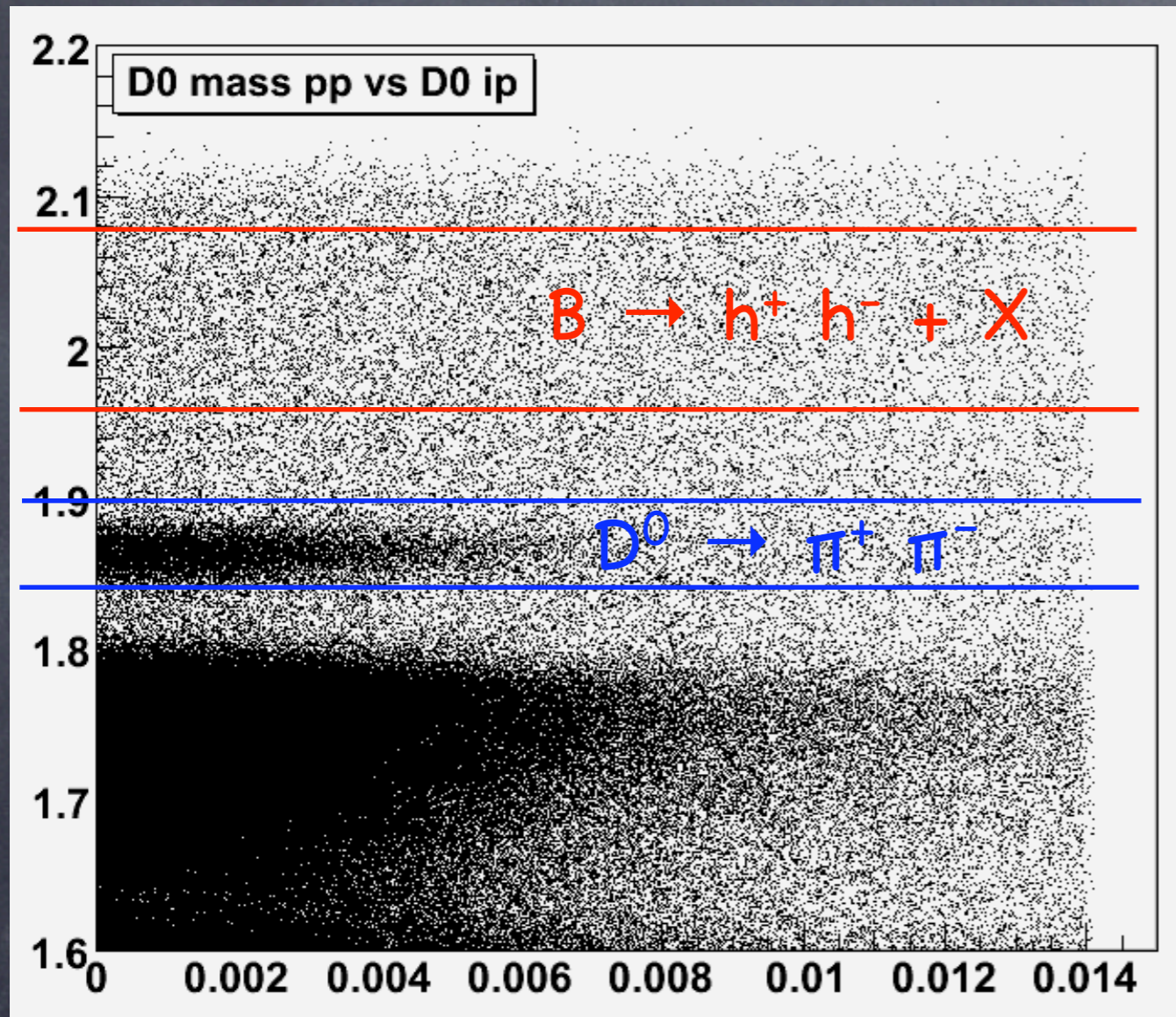


mass( $\pi^+ D^0(\pi^+ k^-)$ ) vs. mass( $\pi^+ k^-$ )



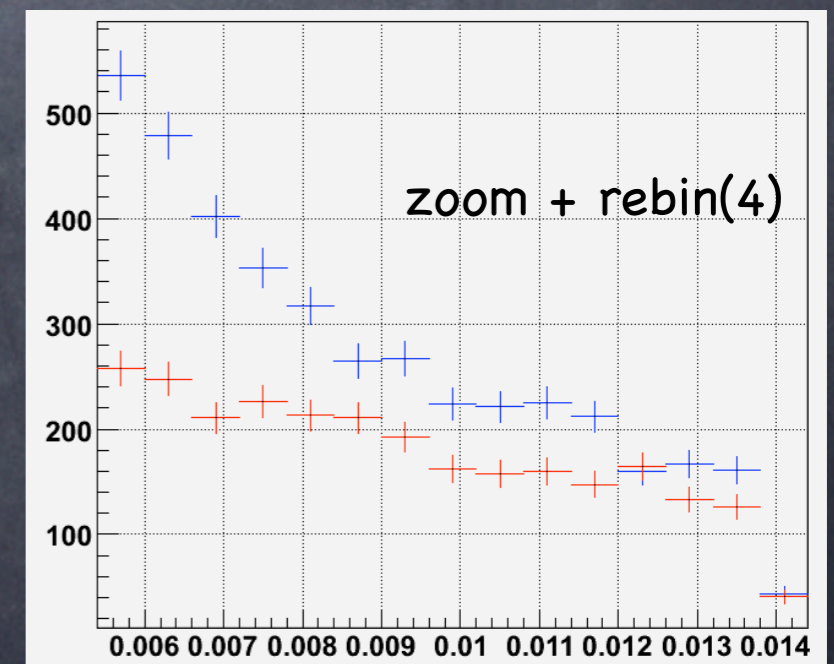
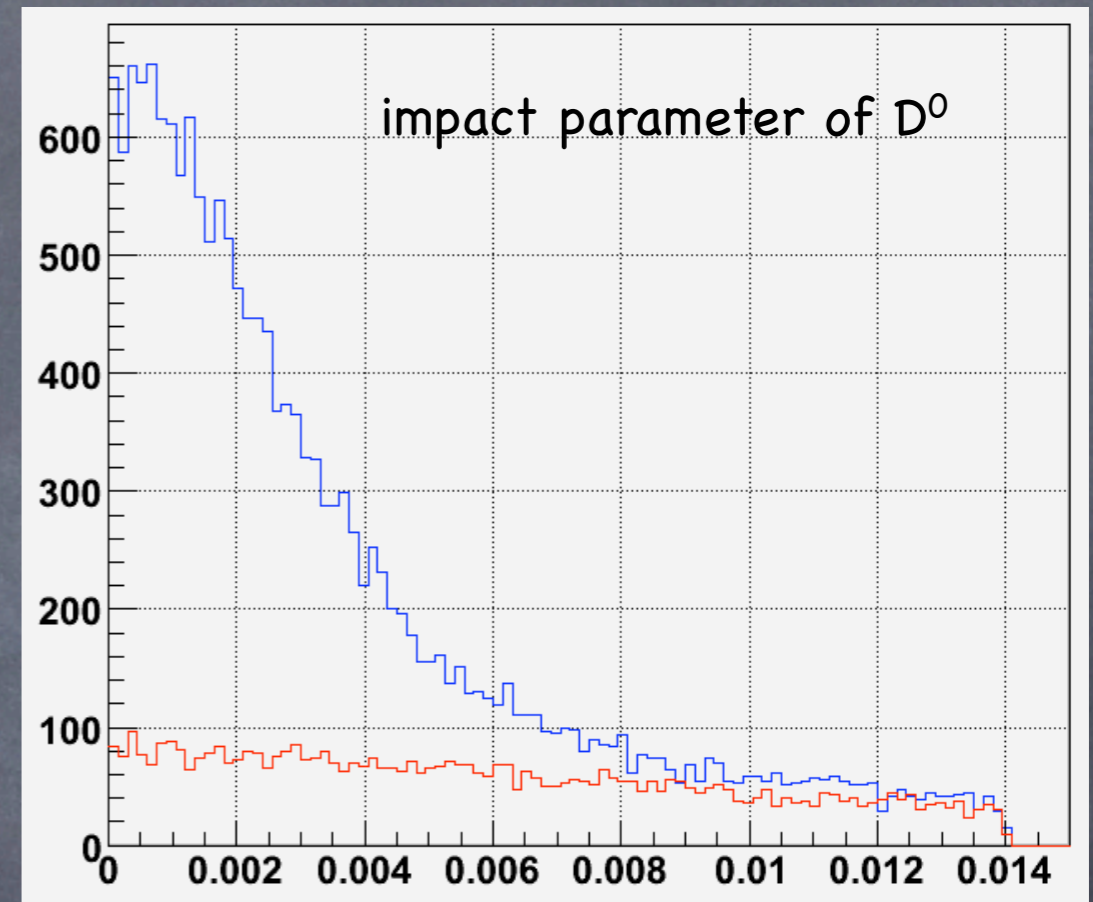
analytical calculation

no  $D^*$  cut

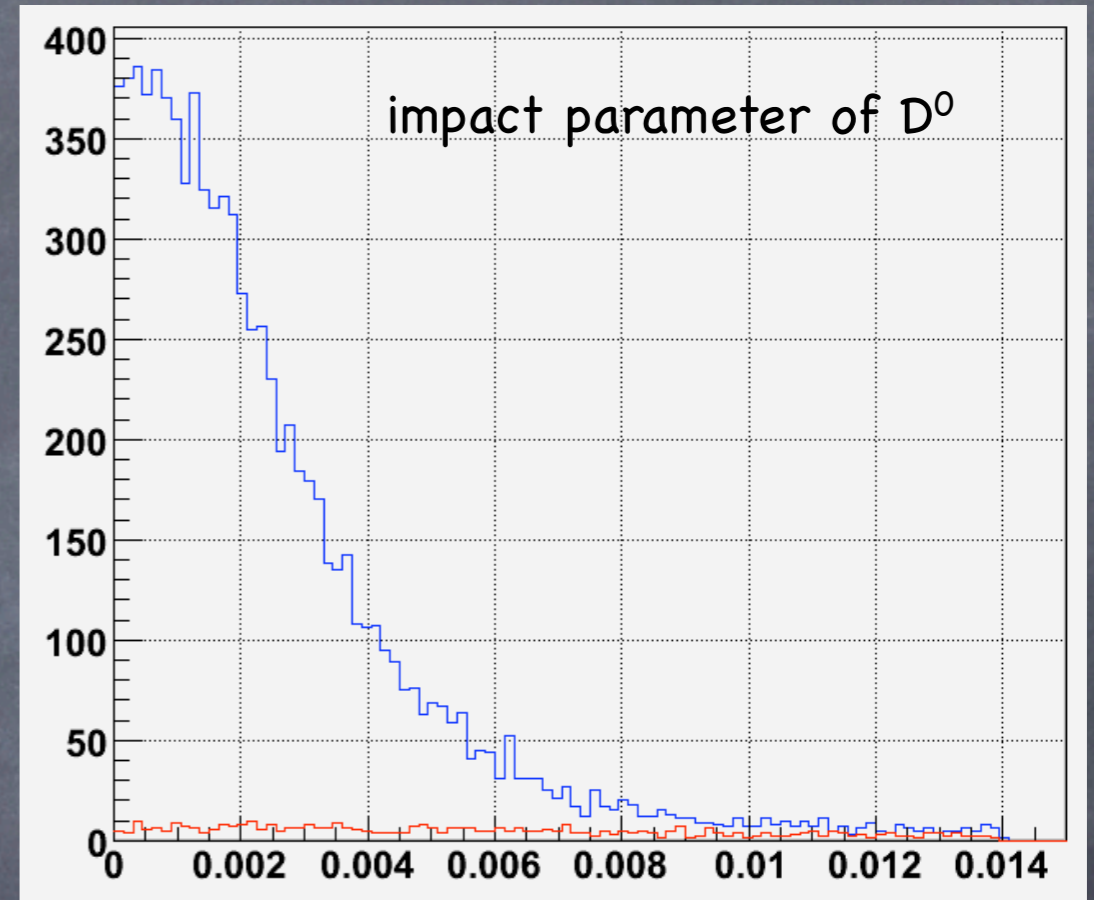
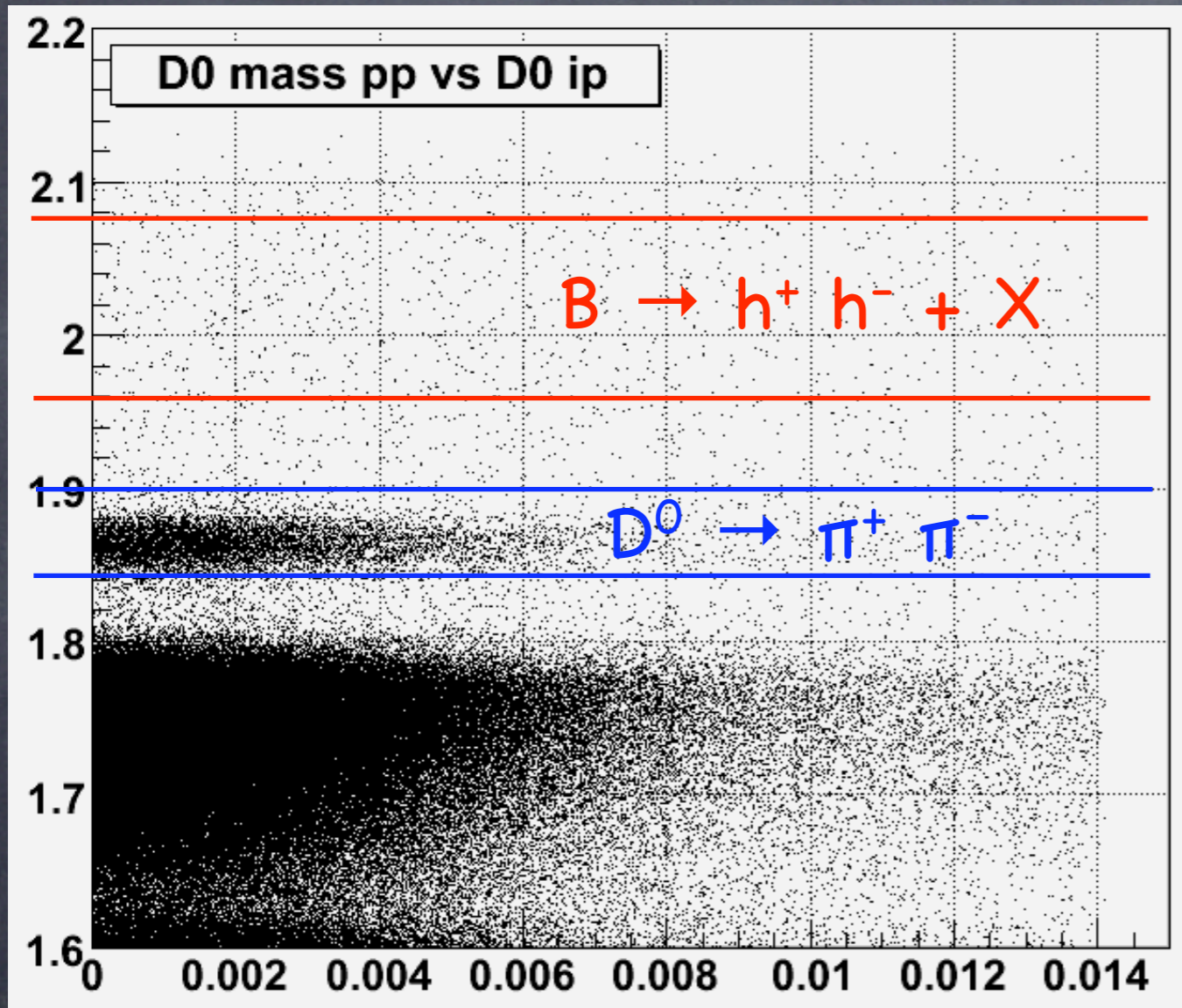


$$1.96 < M_{\pi\pi} < 2.08 \quad (\times 1/2)$$

$$1.84 < M_{\pi\pi} < 1.90$$

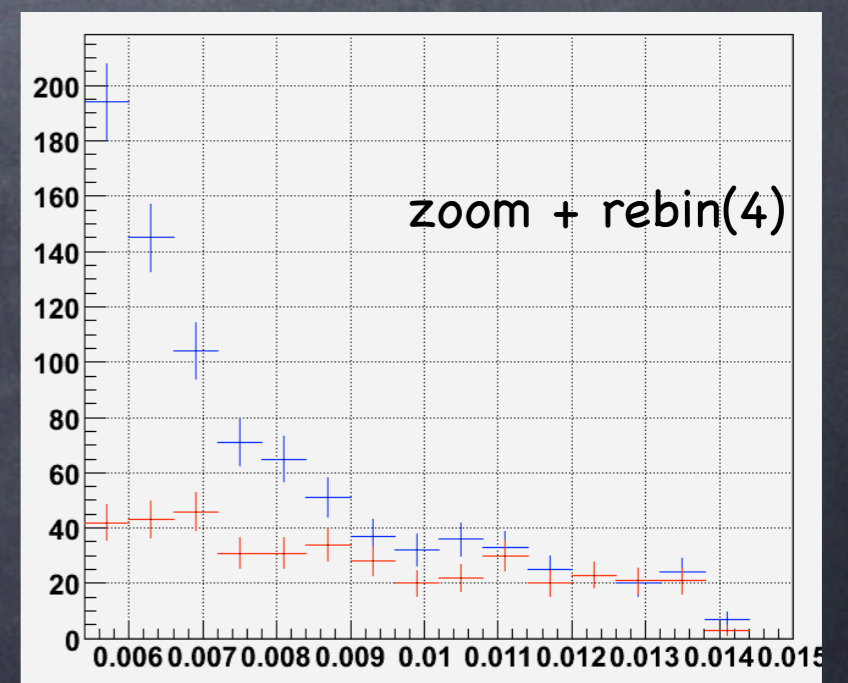


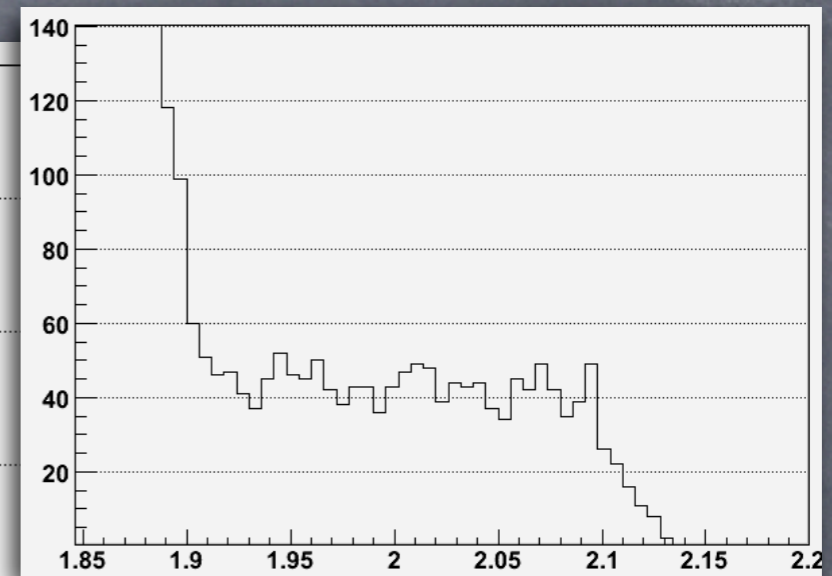
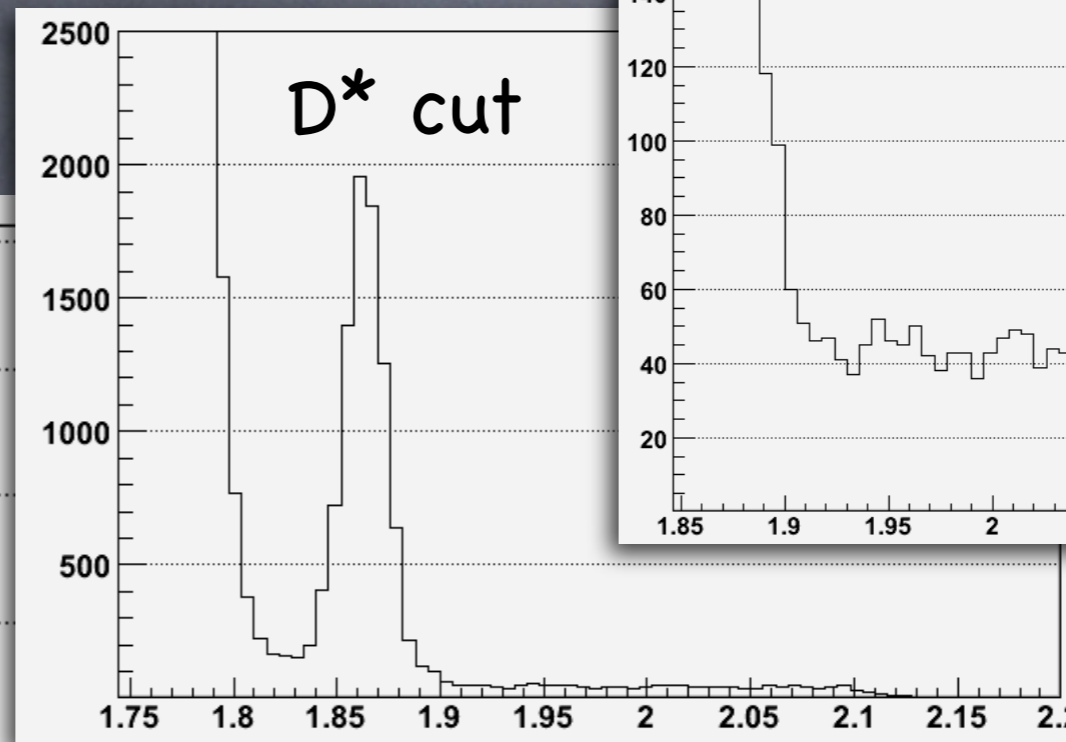
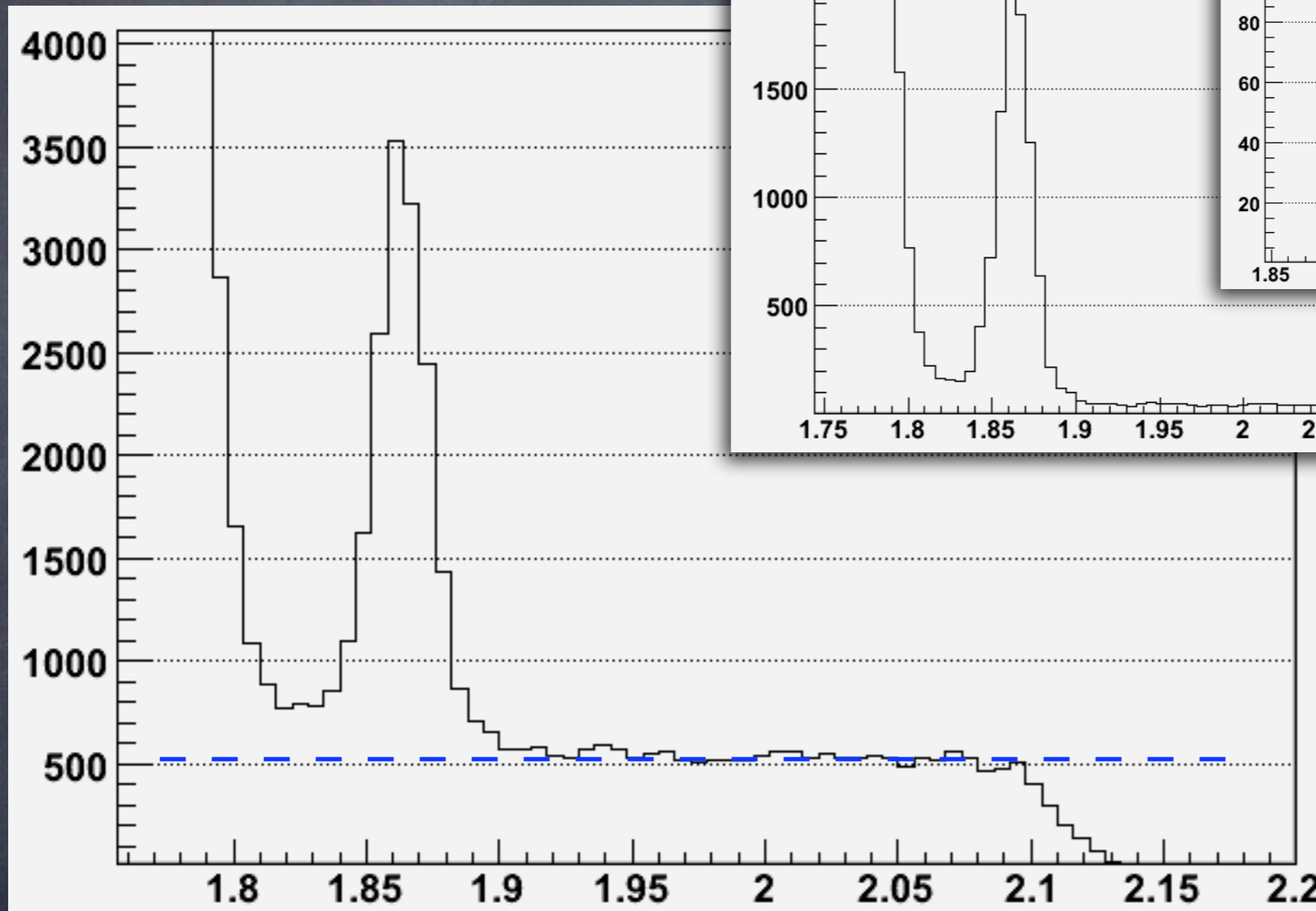
with  $D^*$  cut



$$1.96 < M_{\pi\pi} < 2.08 \quad (\times 1/2)$$

$$1.84 < M_{\pi\pi} < 1.90$$



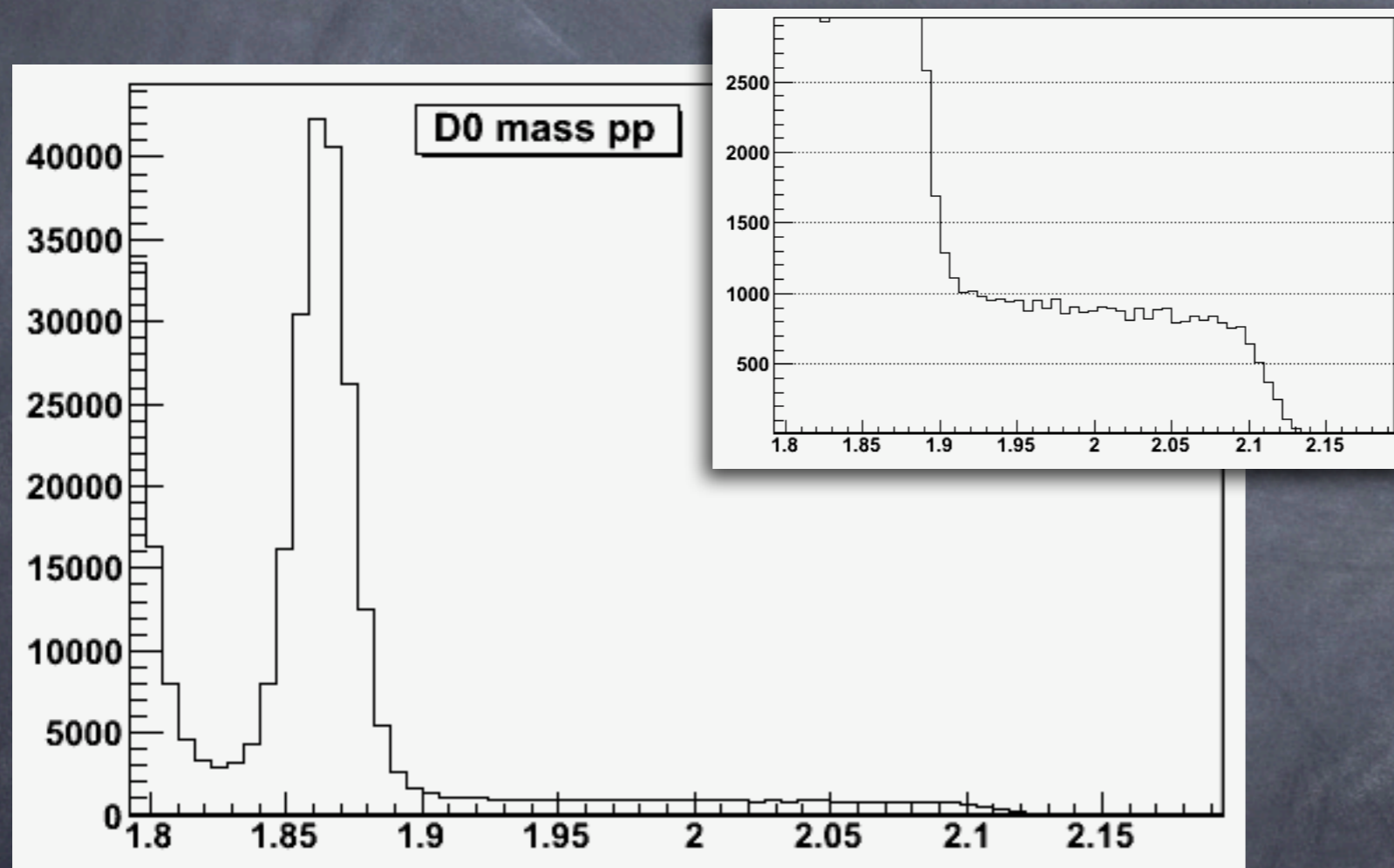


$M_{\pi\pi}$

← flat

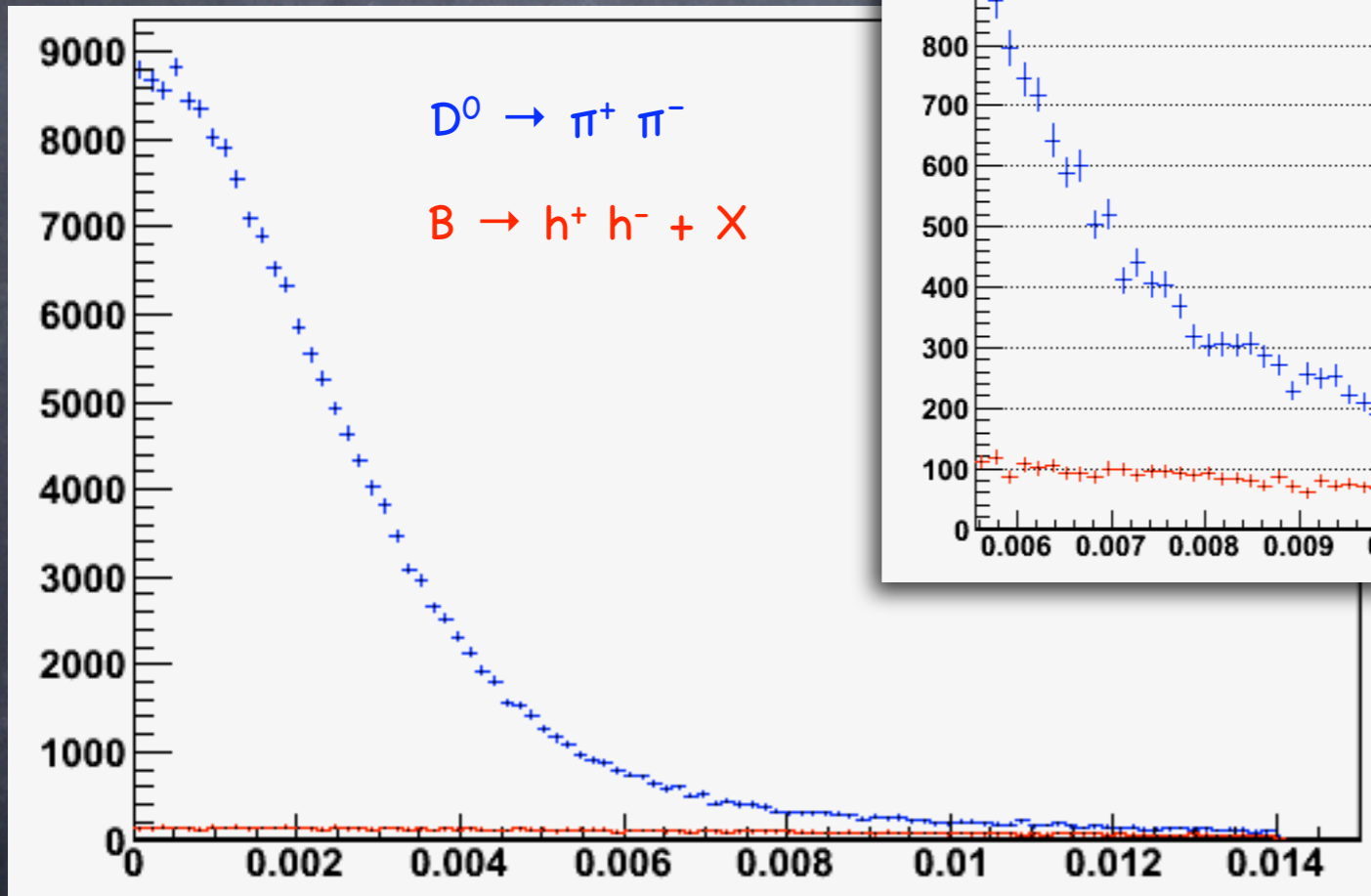
# more statistics

$D^*$  cut



← not completely flat

$M_{\pi\pi}$



impact parameter of  $D^0$

