

Fitter Bias Systematics

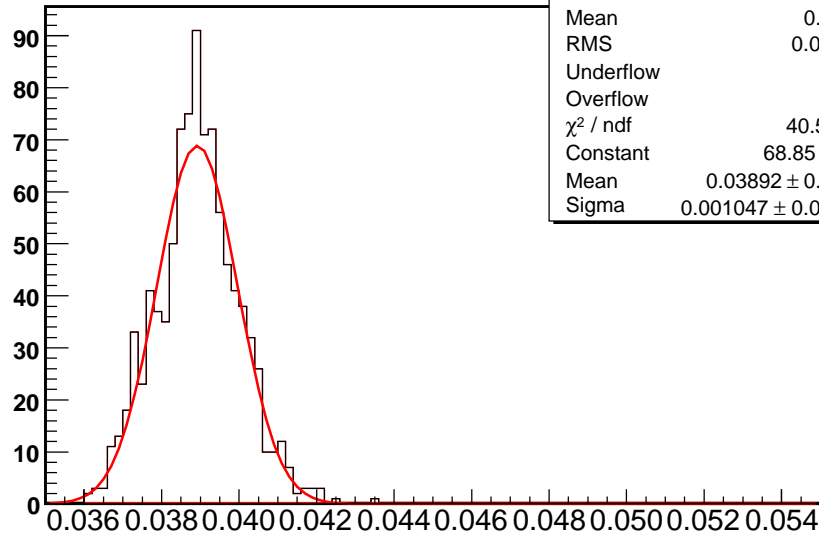
Fitter bias systematic: generate and fit with the same MultiShape configuration.

model	N expt	N signal	$ct(\Lambda_b^0)$ in	$ct(\Lambda_b^0)$ out	diff
MC 10-slice	100	300,000	368.6	$366.9 \pm 1.3\mu m$	-1.7
Data 10-slice	5,000	3,000	409.1	$404.1 \pm 11.6\mu m$	-5.0
Data 10-slice	1,000	30,000	409.1	$405.6 \pm 3.9\mu m$	-3.5
Data Ave Eff	1,000	3,000	390.1	$389.2 \pm 10.5\mu m$	-0.9

More bias in the 10-slice data fits.

$$\underline{\sigma_{ct}(\Lambda_b^0)}$$

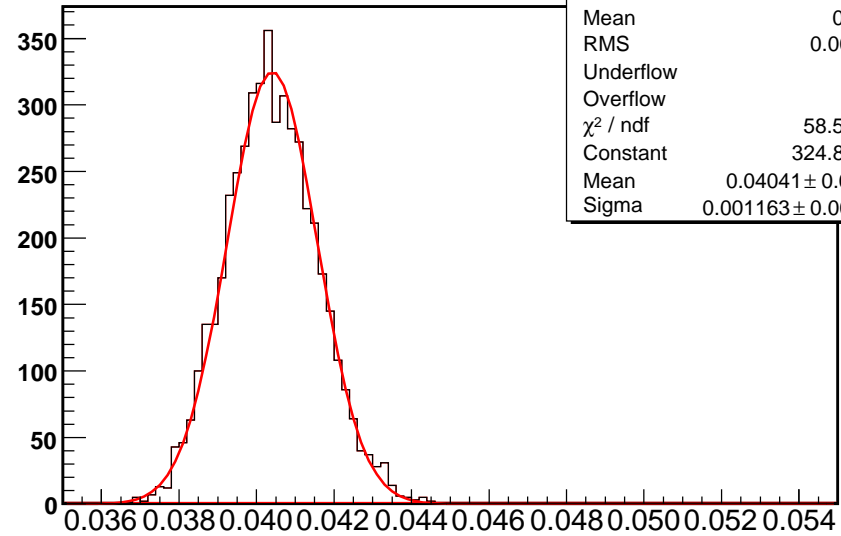
Systematic Ct Distribution



histo	
Entries	941
Mean	0.03894
RMS	0.001076
Underflow	0
Overflow	0
χ^2 / ndf	40.58 / 30
Constant	68.85 ± 2.94
Mean	0.03892 ± 0.00004
Sigma	0.001047 ± 0.000029

Syst. for Ave Eff. ($390.1\mu\text{m}$ as input)

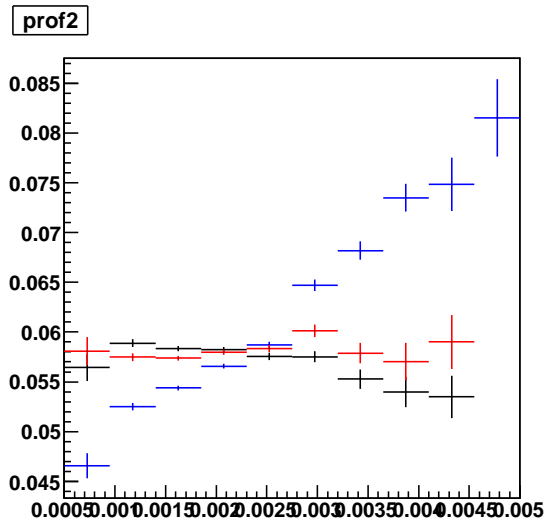
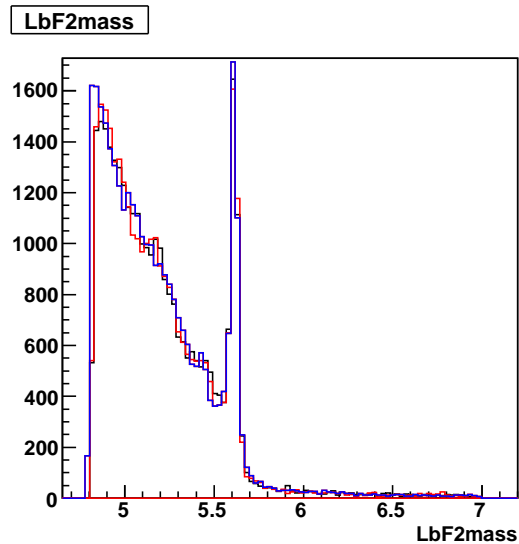
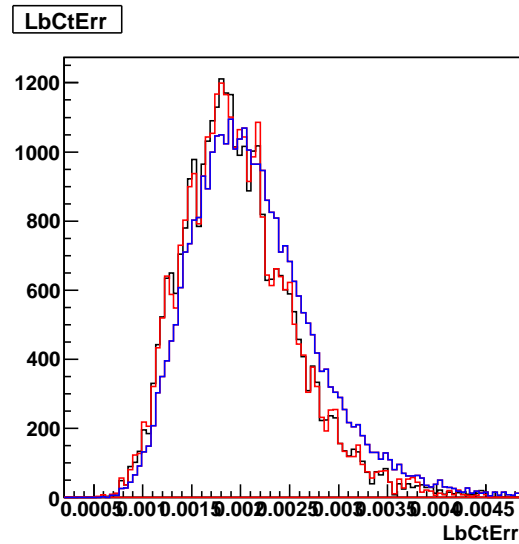
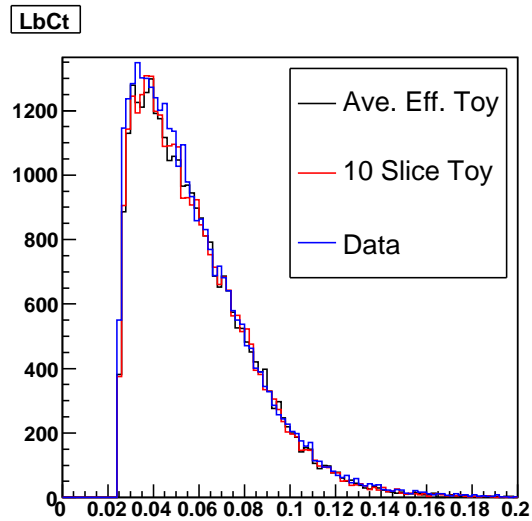
Systematic Ct Distribution



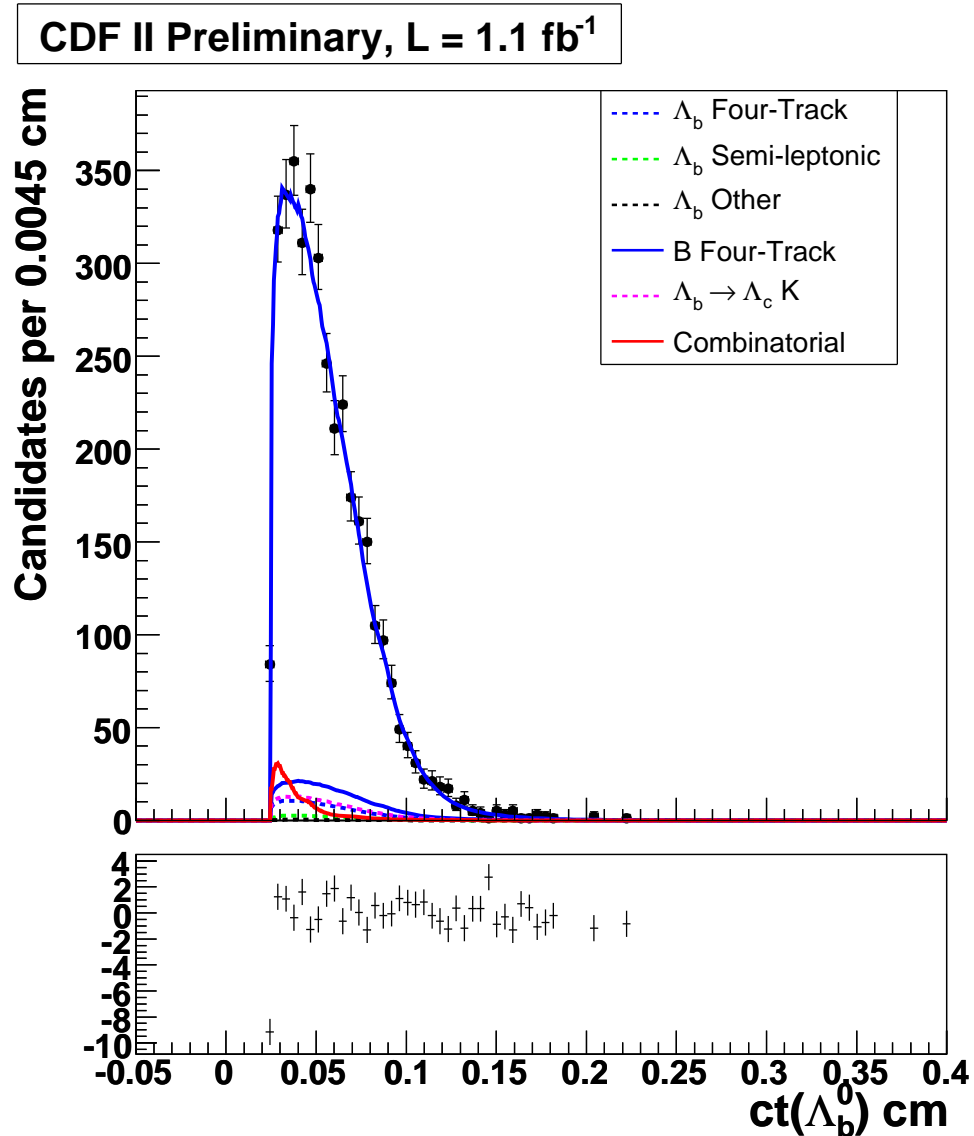
histo	
Entries	4791
Mean	0.0404
RMS	0.001185
Underflow	0
Overflow	0
χ^2 / ndf	58.57 / 37
Constant	324.8 ± 5.8
Mean	0.04041 ± 0.00002
Sigma	0.001163 ± 0.000012

Syst. for 10-slice Eff. ($409.1\mu\text{m}$ as input)

Toy MC Comparison: Data, 3, and 10 slices



Blinded Data: Ave Eff Fit



$$ct(\Lambda_b^0) = 390.1 \pm 10.5 \mu\text{m}$$

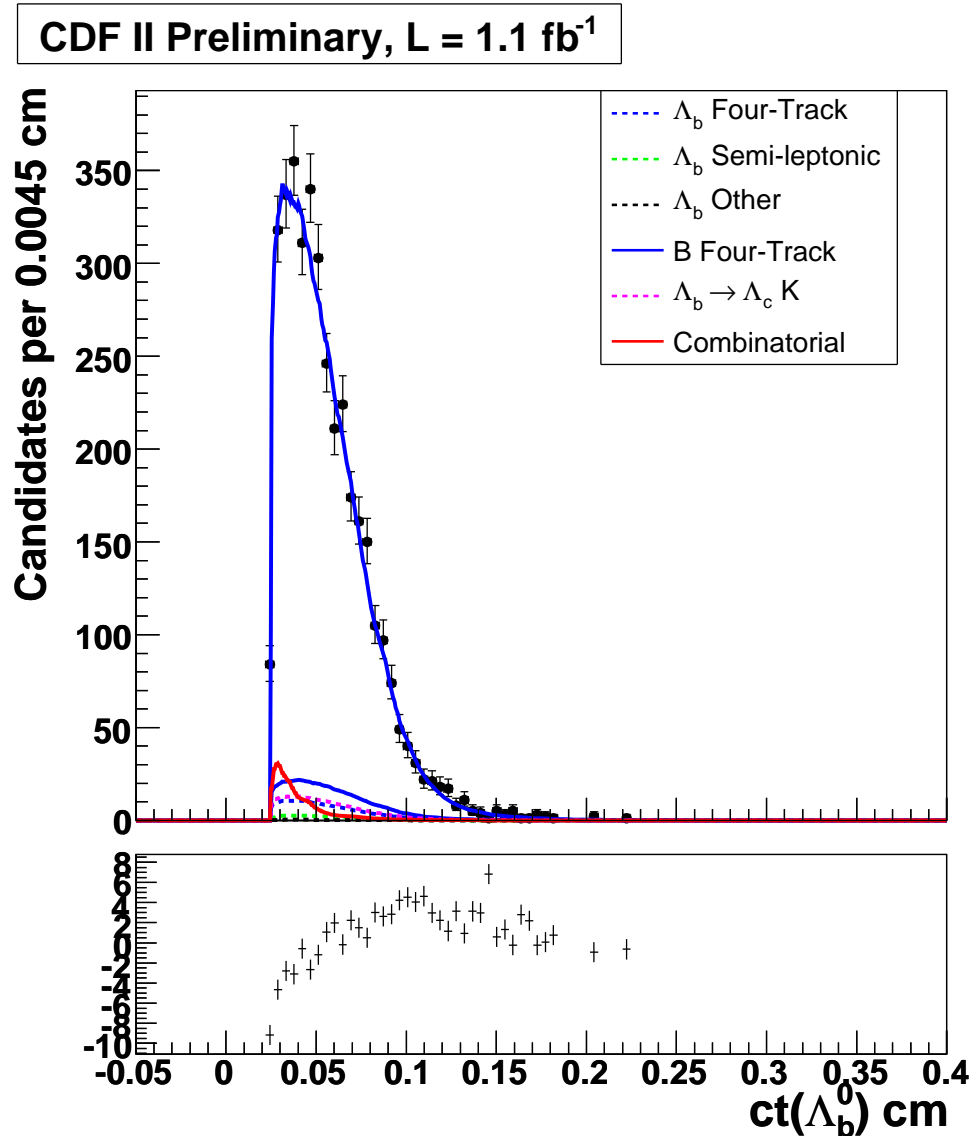
$$p - \text{value} = 0.47905$$

$$\chi^2 = 84.013937$$

$$ndf = 84$$

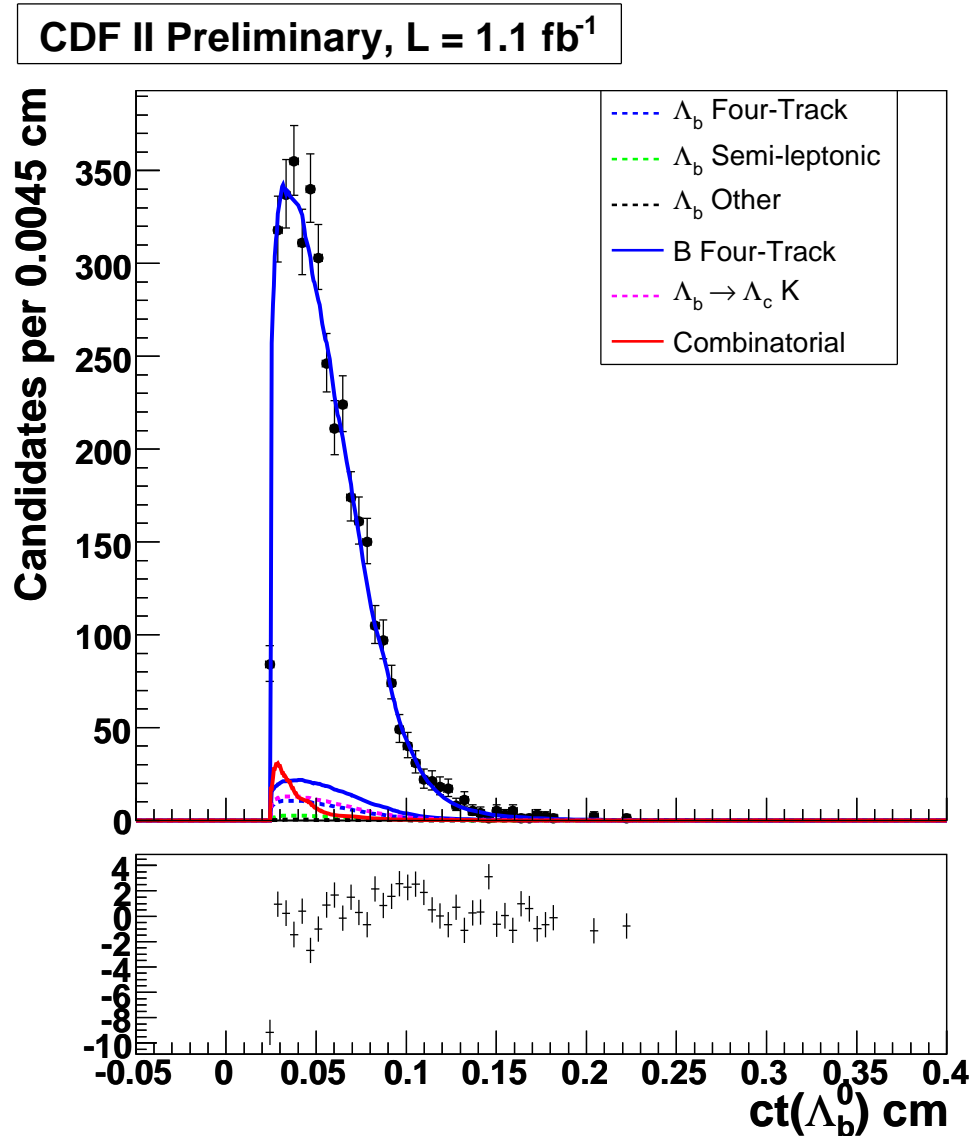
$$\chi^2 / ndf = 1.000166$$

Blinded Data: 3 slice Fit



$$\begin{aligned}
 ct(\Lambda_b^0) &= 409.1 \pm 11.8 \mu\text{m} \\
 p - \text{value} &= 0.478006 \\
 \chi^2 &= 84.047951 \\
 ndf &= 84 \\
 \chi^2 / ndf &= 1.000571
 \end{aligned}$$

Blinded Data: 10 slice Fit



$$ct(\Lambda_b^0) = 409.4 \pm 11.9 \mu m$$

$$p - value = 0.478922$$

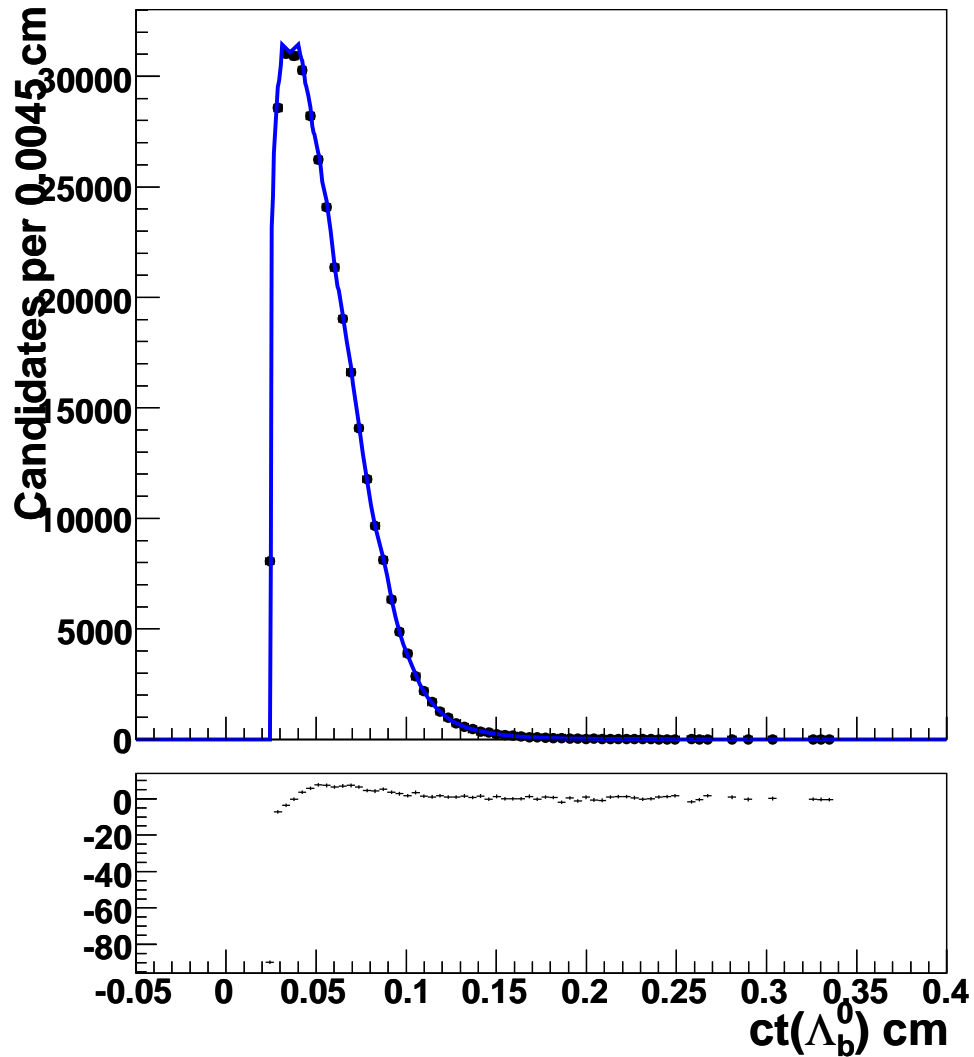
$$\chi^2 = 84.018105$$

$$ndf = 84$$

$$\chi^2 / ndf = 1.0002155$$

Signal MC: Ave Eff Fit

CDF II Preliminary, $L = 1.1 \text{ fb}^{-1}$



$$\begin{aligned} ct(\Lambda_b^0) &= 368.6 \pm 1.0 \mu\text{m} \\ p\text{-value} &= 0.0 \\ \chi^2 &= 8064.0 \\ ndf &= 84 \\ \chi^2/ndf &= 96.0 \end{aligned}$$

Signal MC: 10 Slice Fit

$$ct(\Lambda_b^0) = 367.2 \pm 1.0 \mu m$$

$$p - value = ??$$

$$\chi^2 = ???$$

$$ndf = ???$$

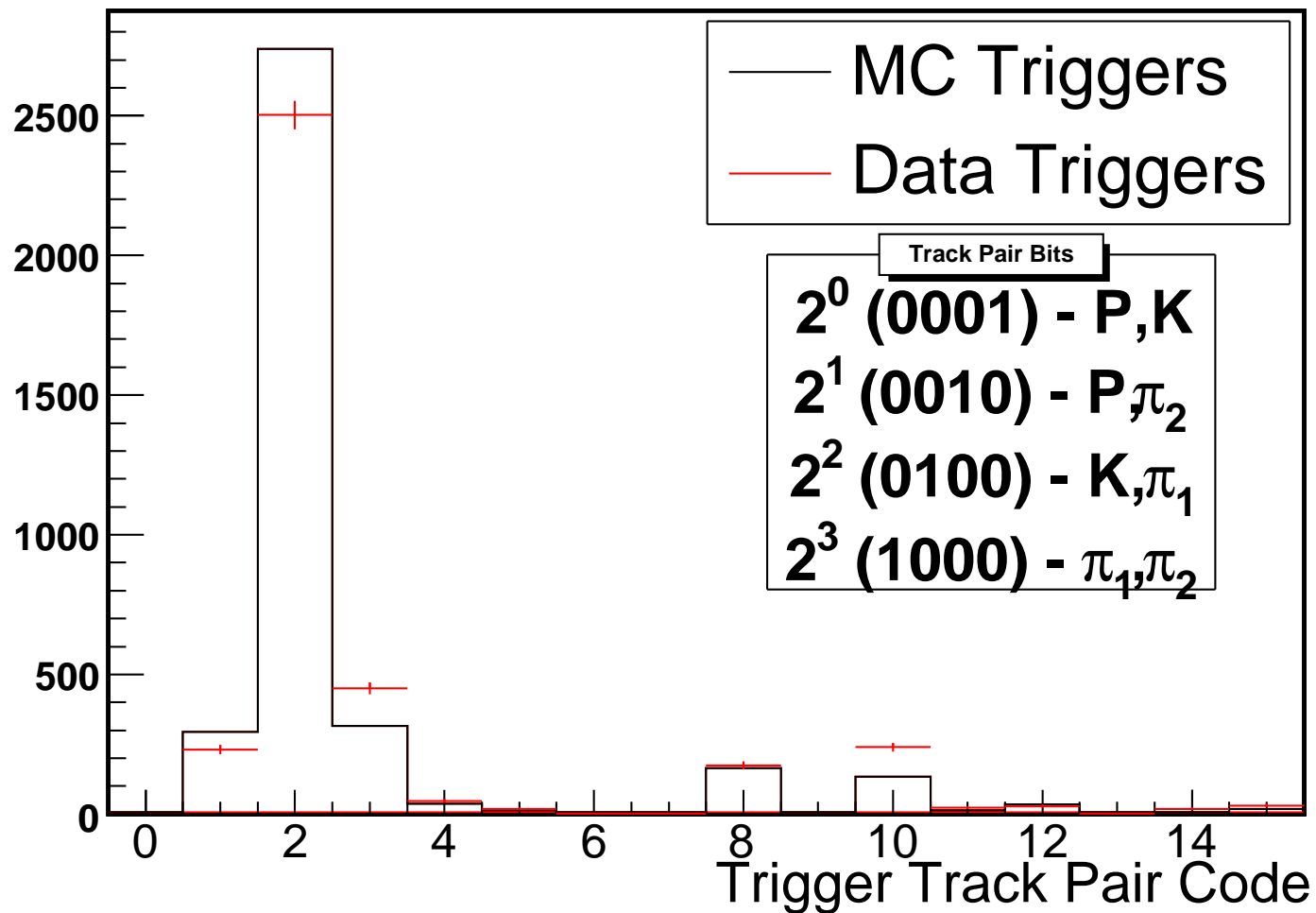
$$\chi^2/ndf = ???$$

Fit Results Summary

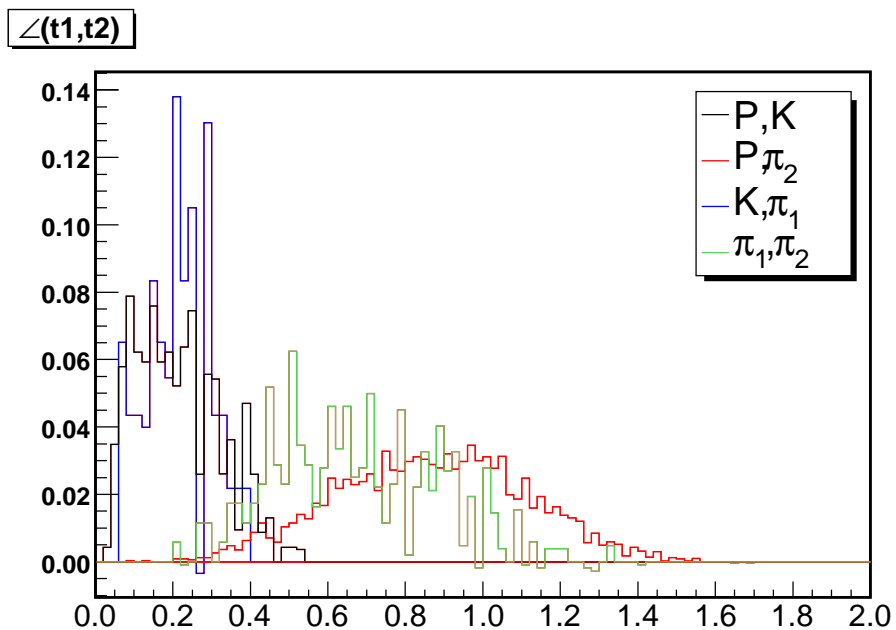
Fit	$ct(\Lambda_b^0)$	p-value	χ^2	χ^2/ndf
Data Ave. Eff.	390.1 ± 10.5	.47905	84.013937	1.000166
Data 3 slices	409.1 ± 11.8	.47800	84.047951	1.000571
Data 10 slices	409.4 ± 11.9	.47892	84.018105	1.000215
MC Ave. Eff.	368.6 ± 1.0	0.0	8064.0	96.0
MC 10 slices	367.2 ± 1.0	0.0		

Trigger Composition

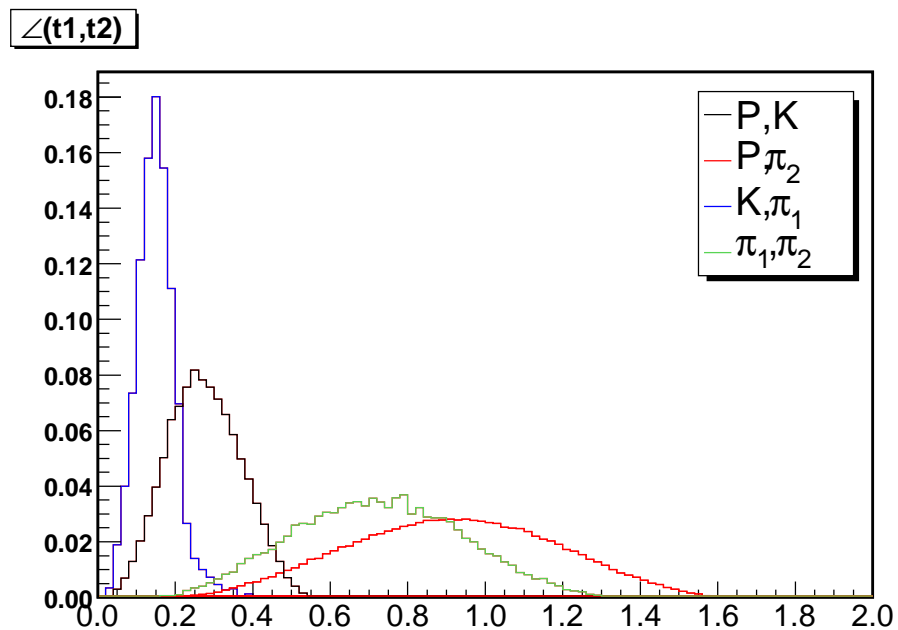
Trigger Composition



Angle Between Trigger Tracks

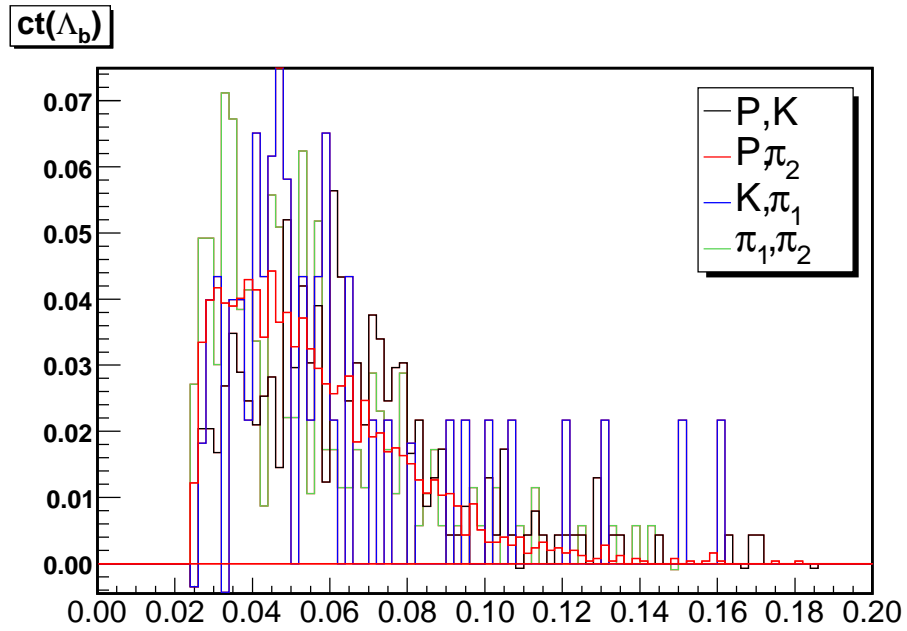


Side-Band Subtracted Data

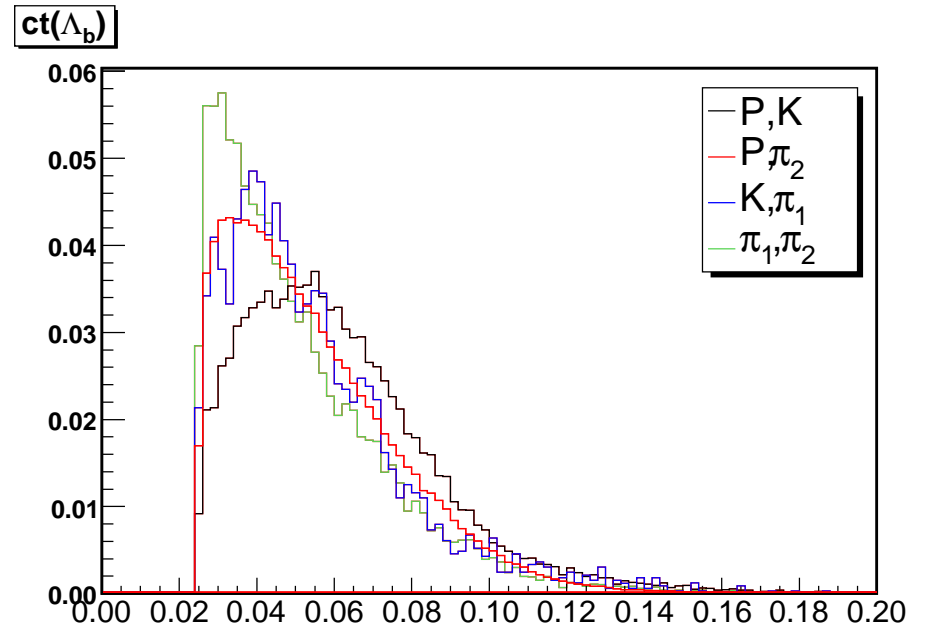


Monte Carlo

$$\underline{ct(\Lambda_b^0)}$$

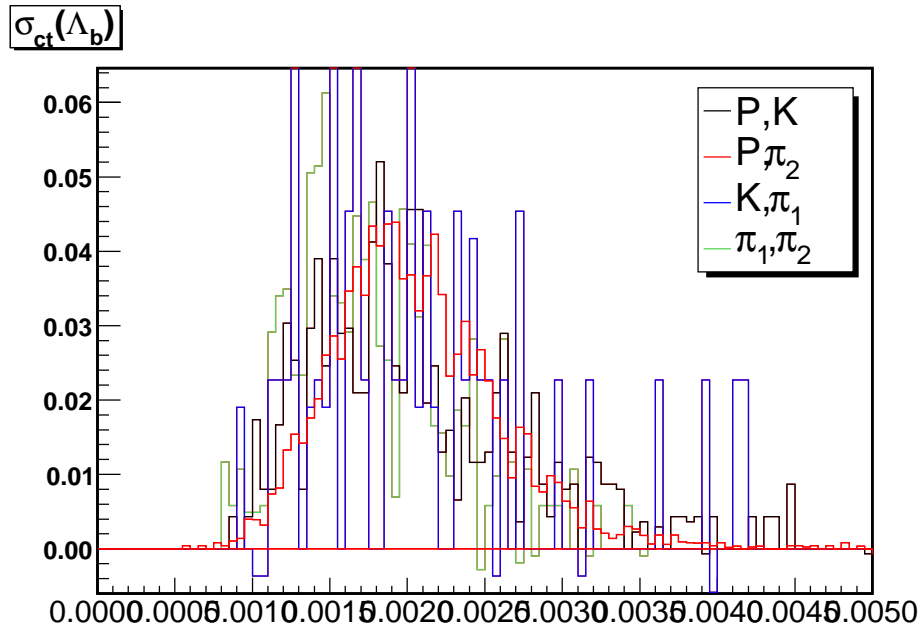


Side-Band Subtracted Data

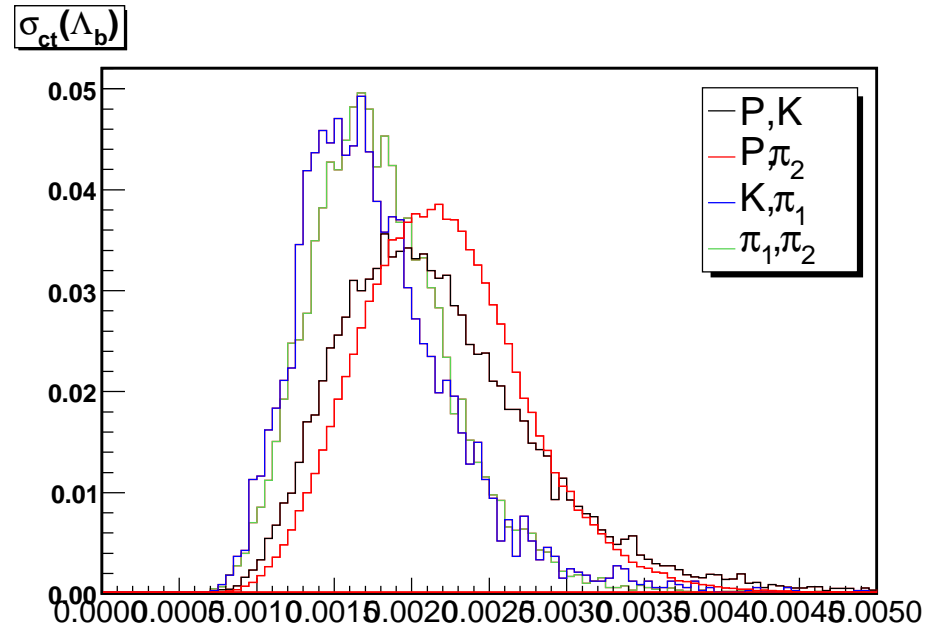


Monte Carlo

$$\underline{\sigma_{ct}(\Lambda_b^0)}$$

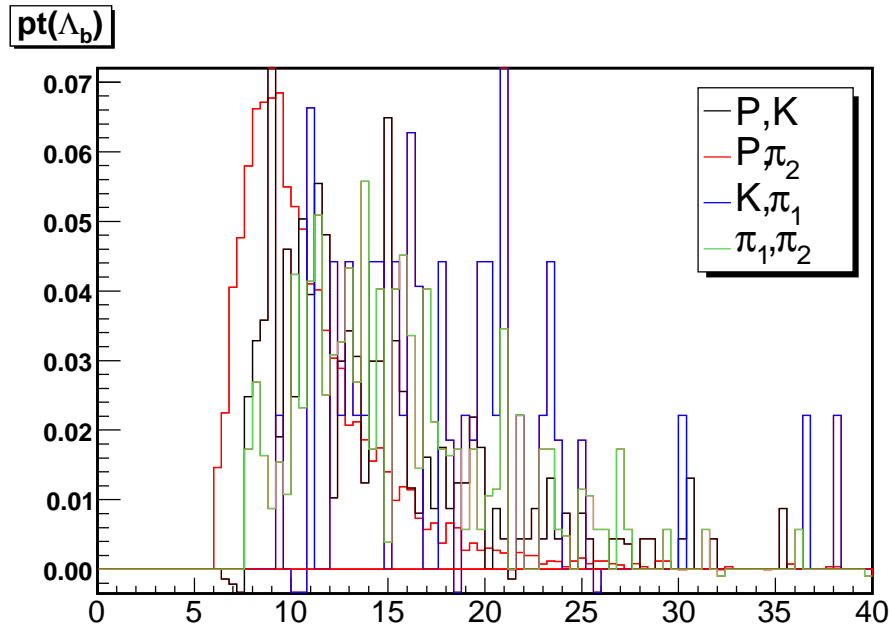


Side-Band Subtracted Data

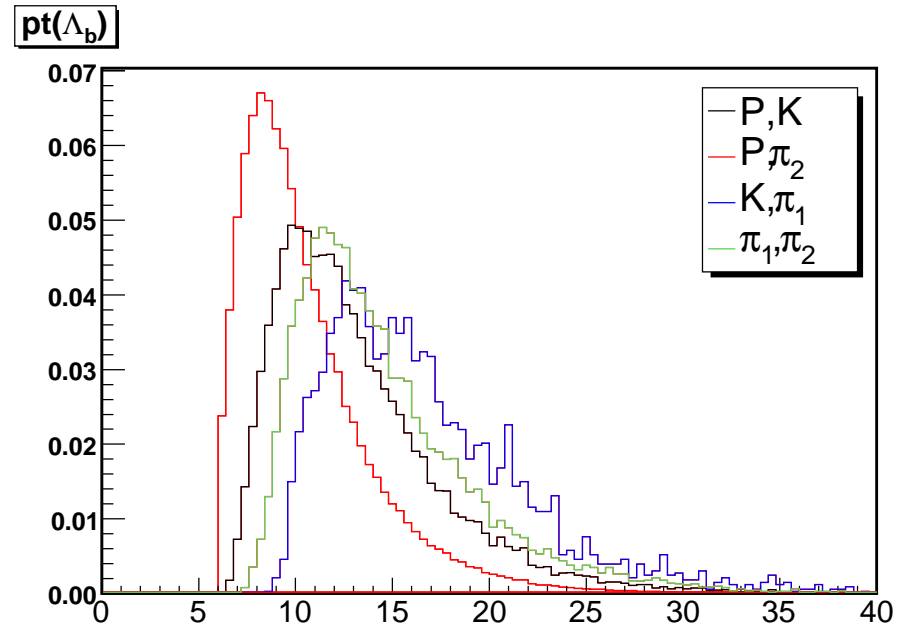


Monte Carlo

$p_T(\Lambda_b^0)$



Side-Band Subtracted Data



Monte Carlo