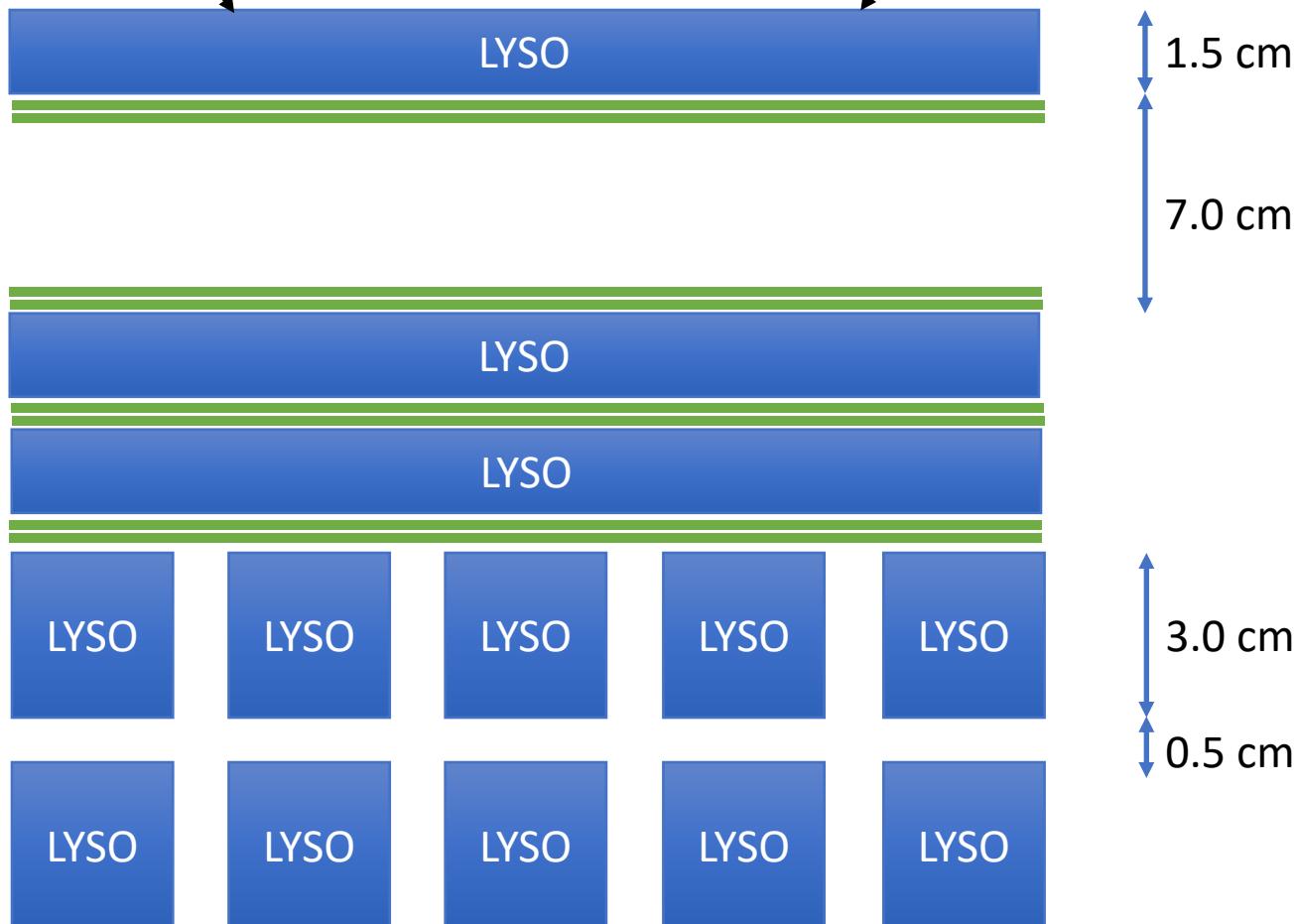


## TIC - Configurazione «base»

distribuzione isotropa entro  $\pm 30^\circ$



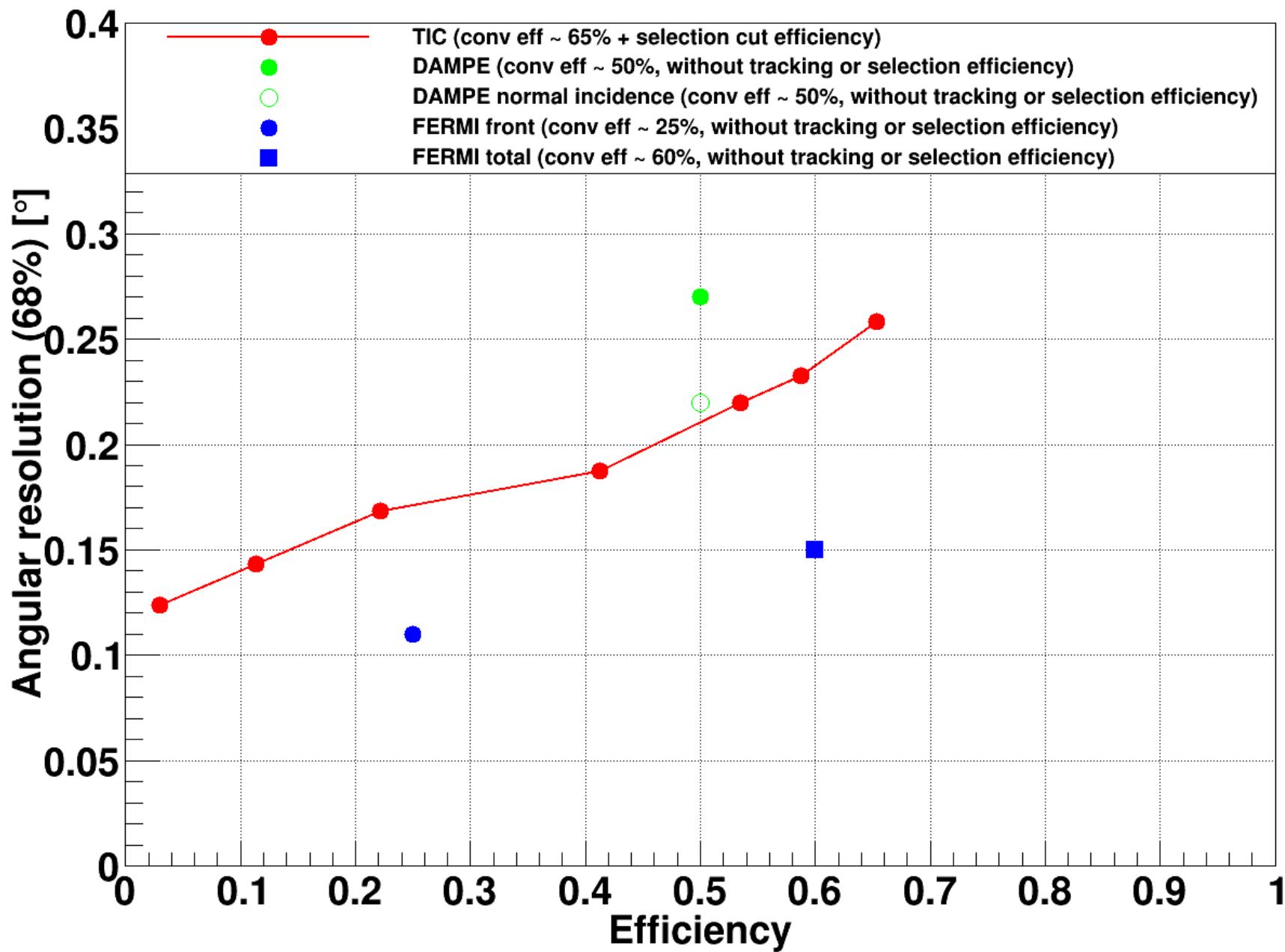
Ci interessa la risoluzione angolare per fotoni.

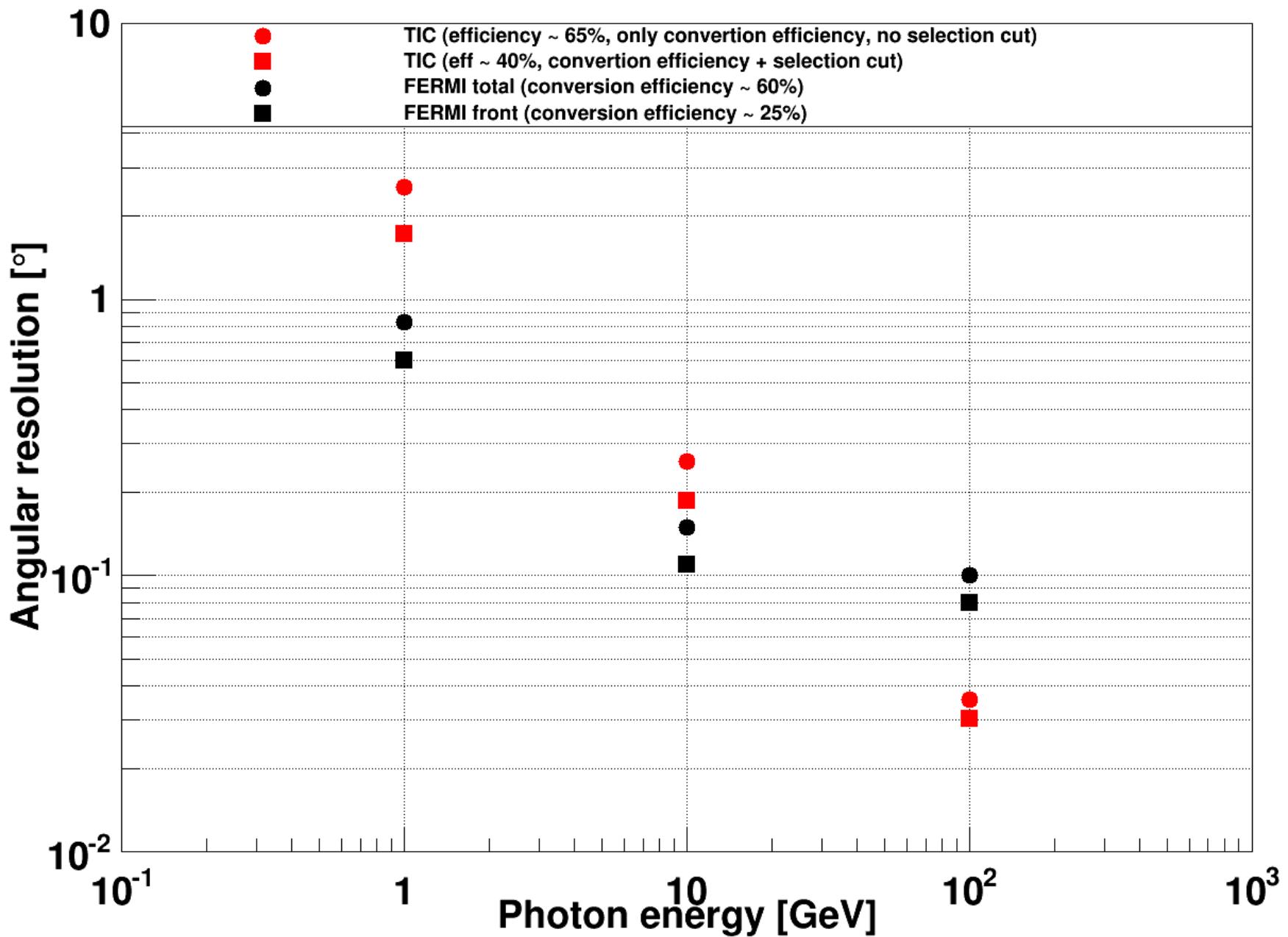
Limite «teorico» dato dalla diffusione multipla in 0.75 cm di LYSO (in media)

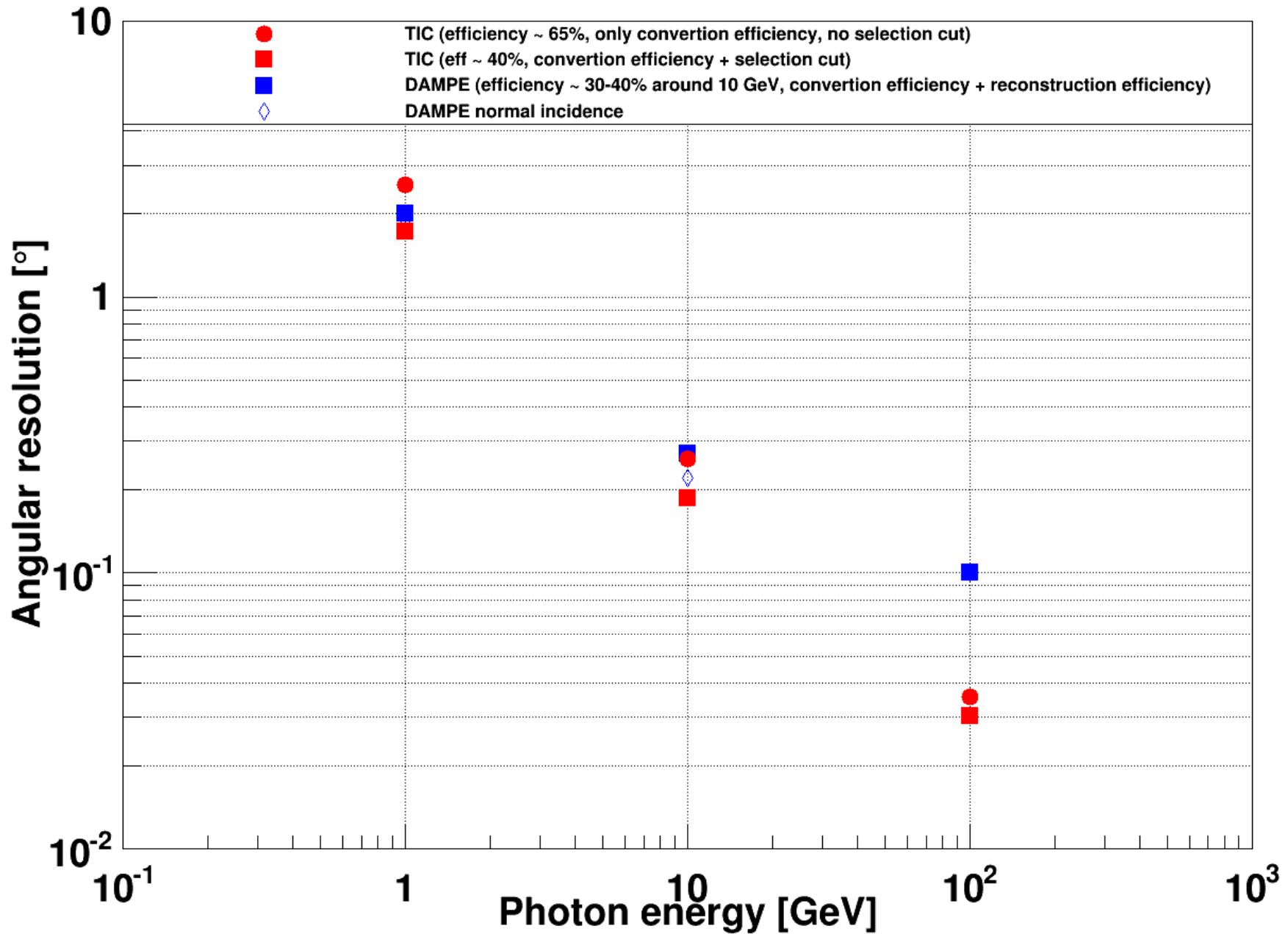
Valore approssimato a 10 GeV:  $\Delta\theta \sim 0.24^\circ$

Probabilità di conversione in 1.5 cm di LYSO 65.3%

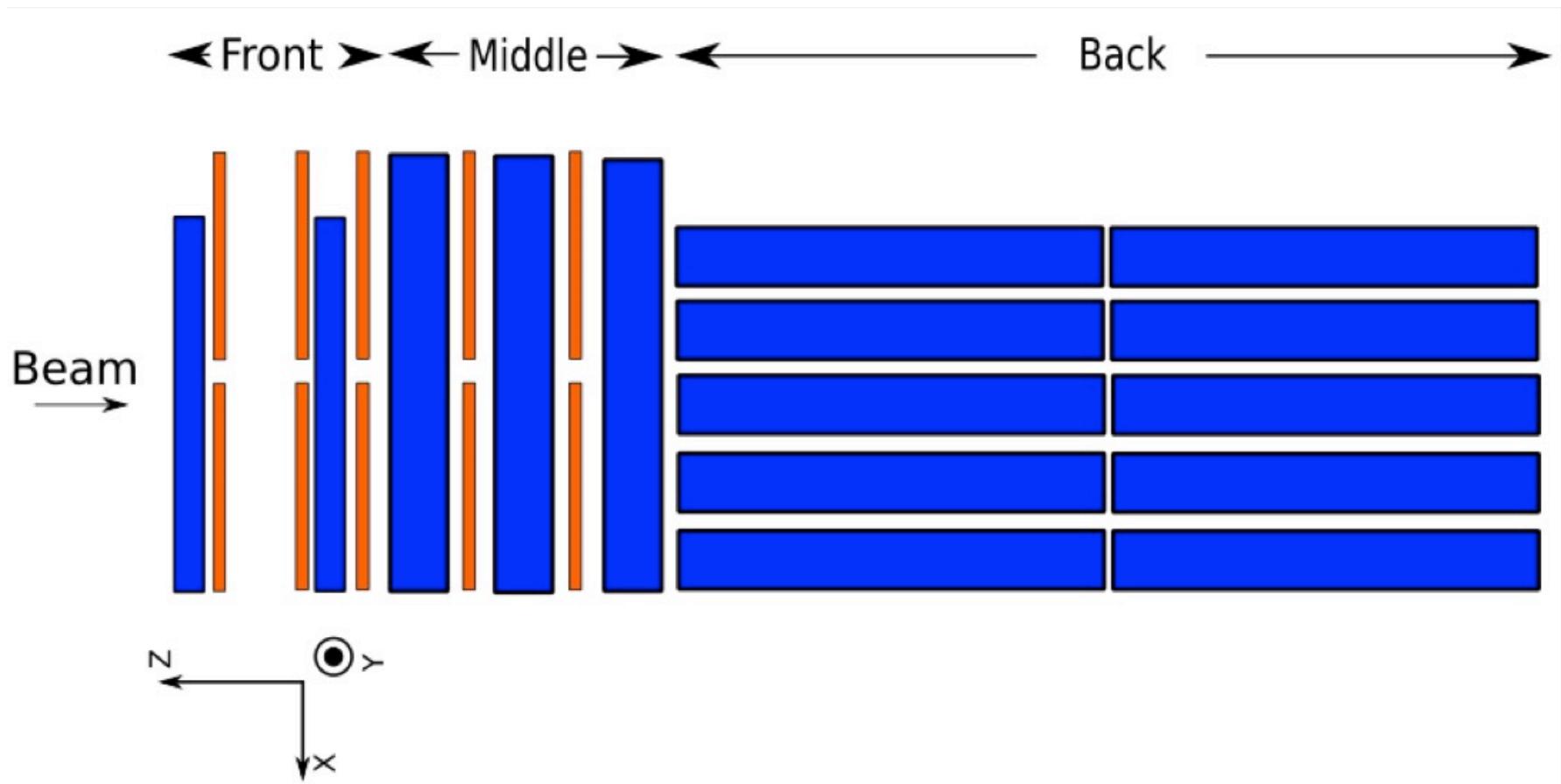
# 10 GeV (TIC data up to 30°)





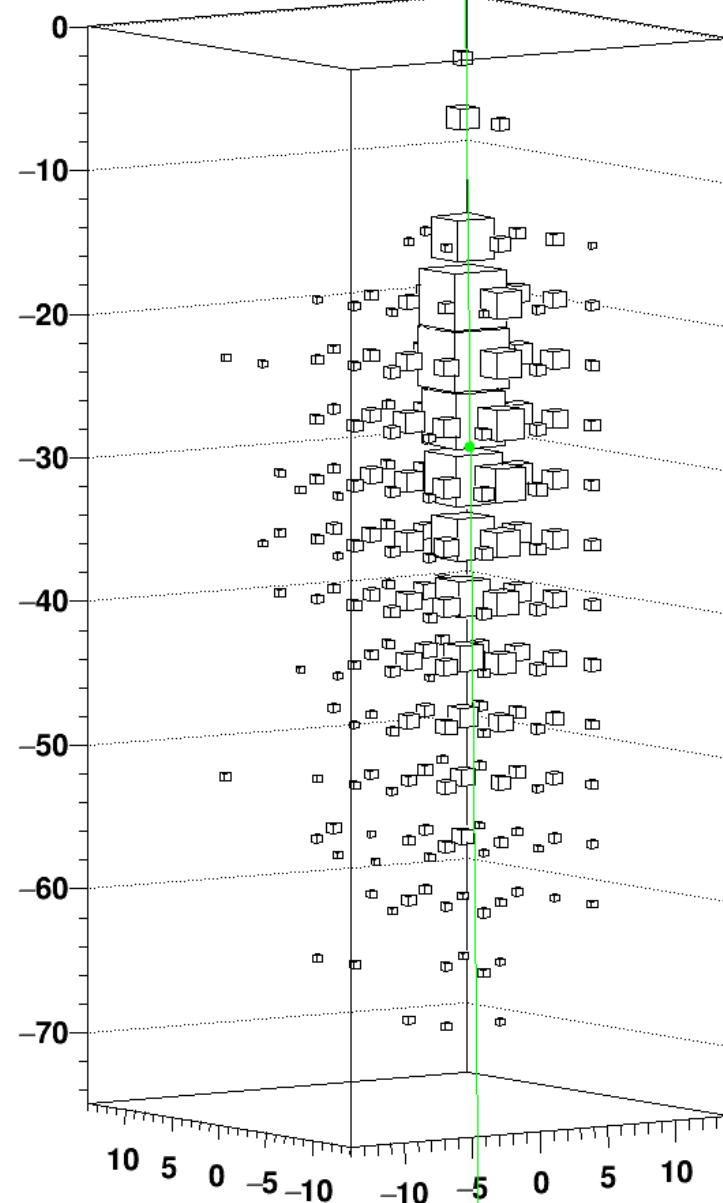


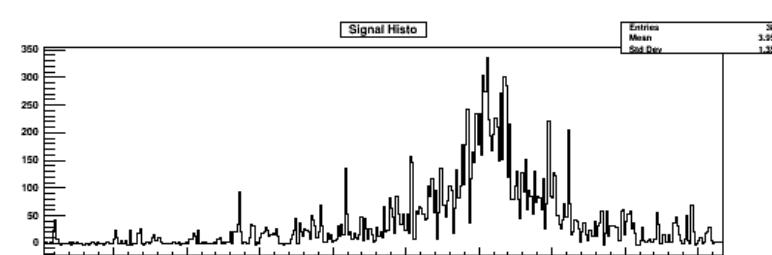
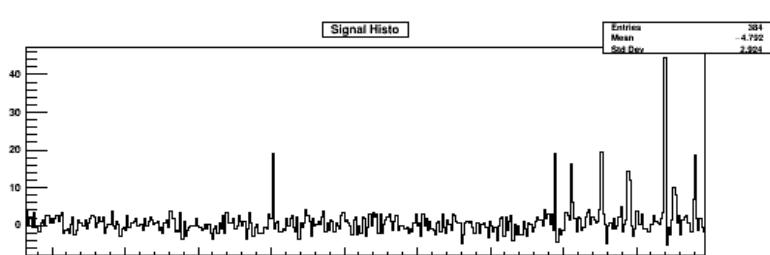
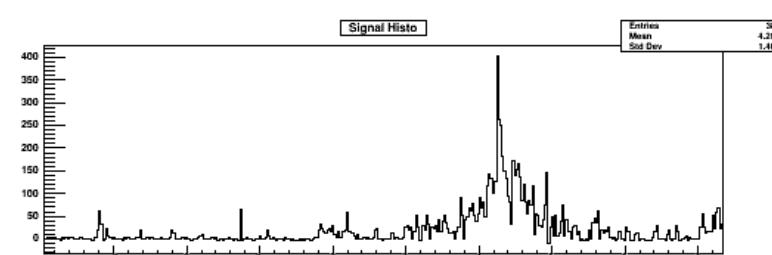
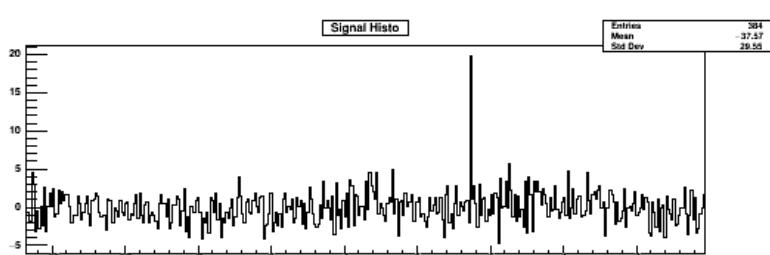
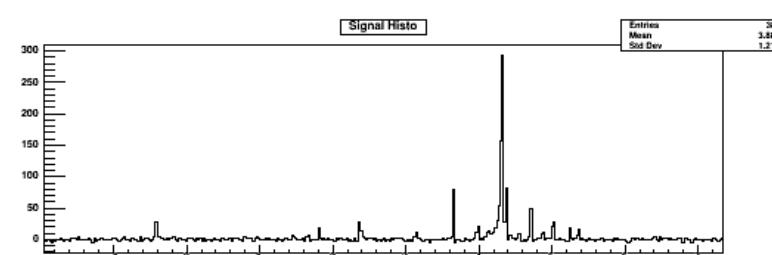
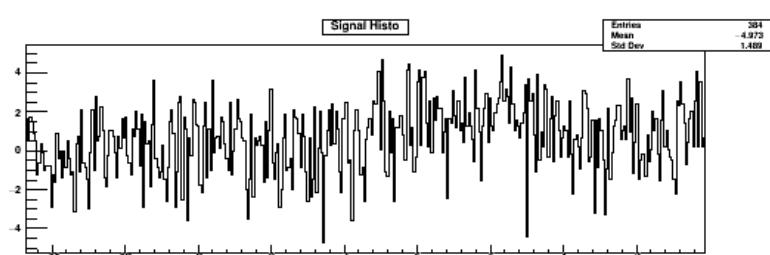
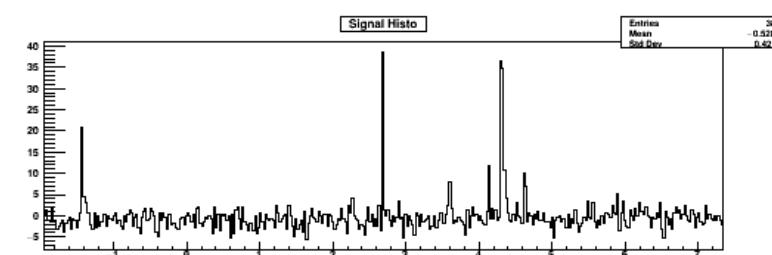
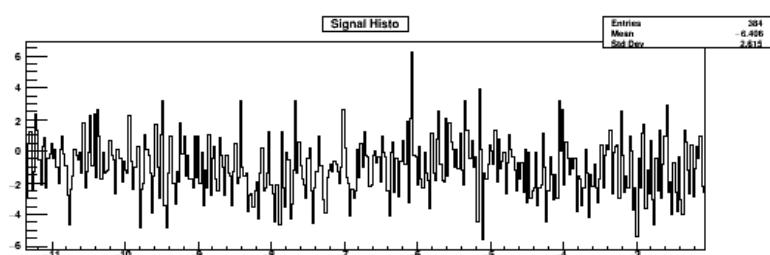
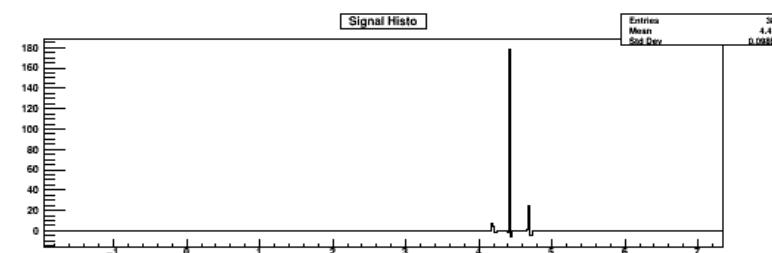
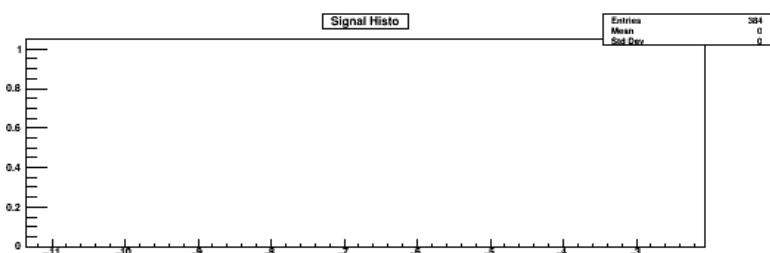
# TIC test 2018



Image

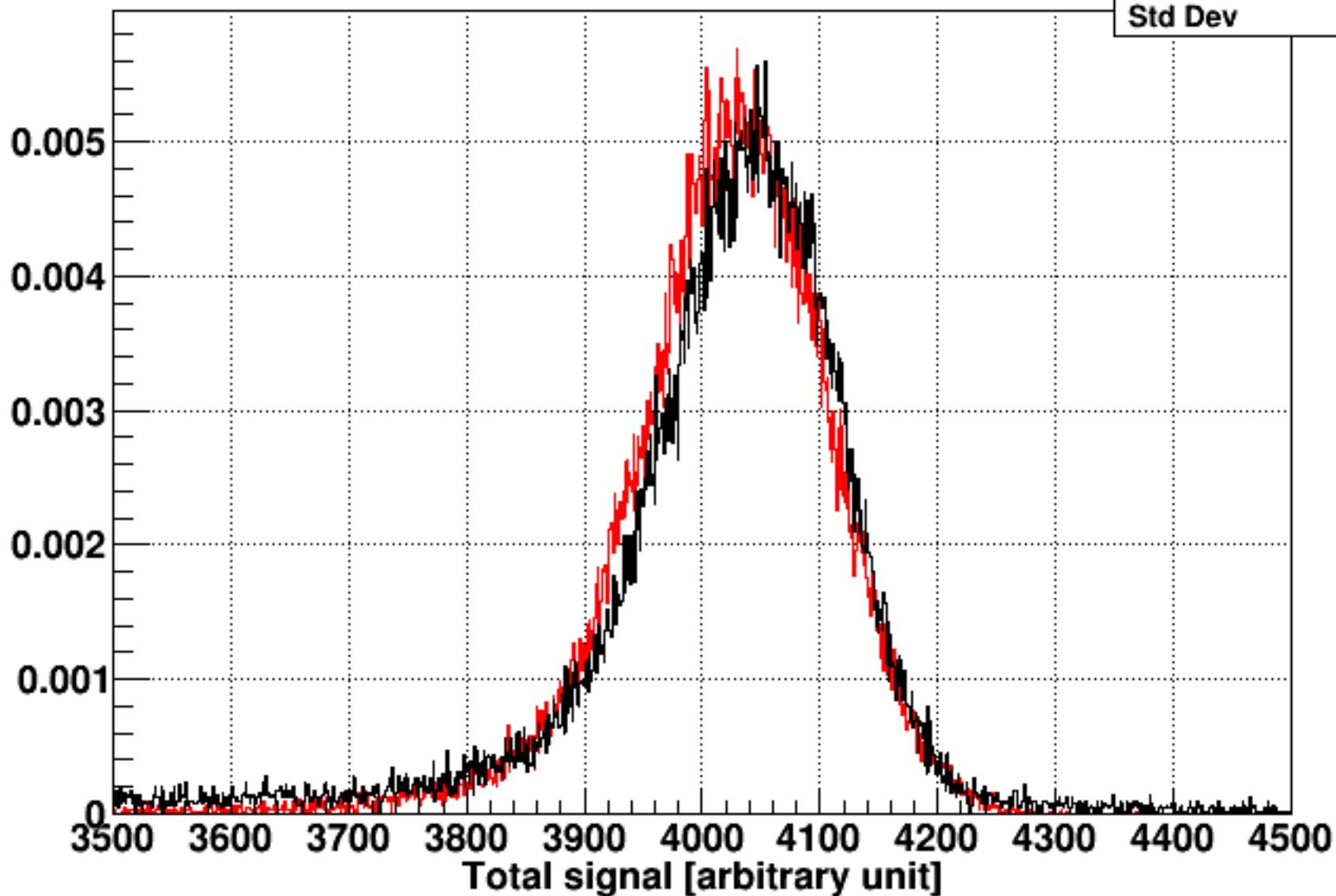
Electron 100 GeV



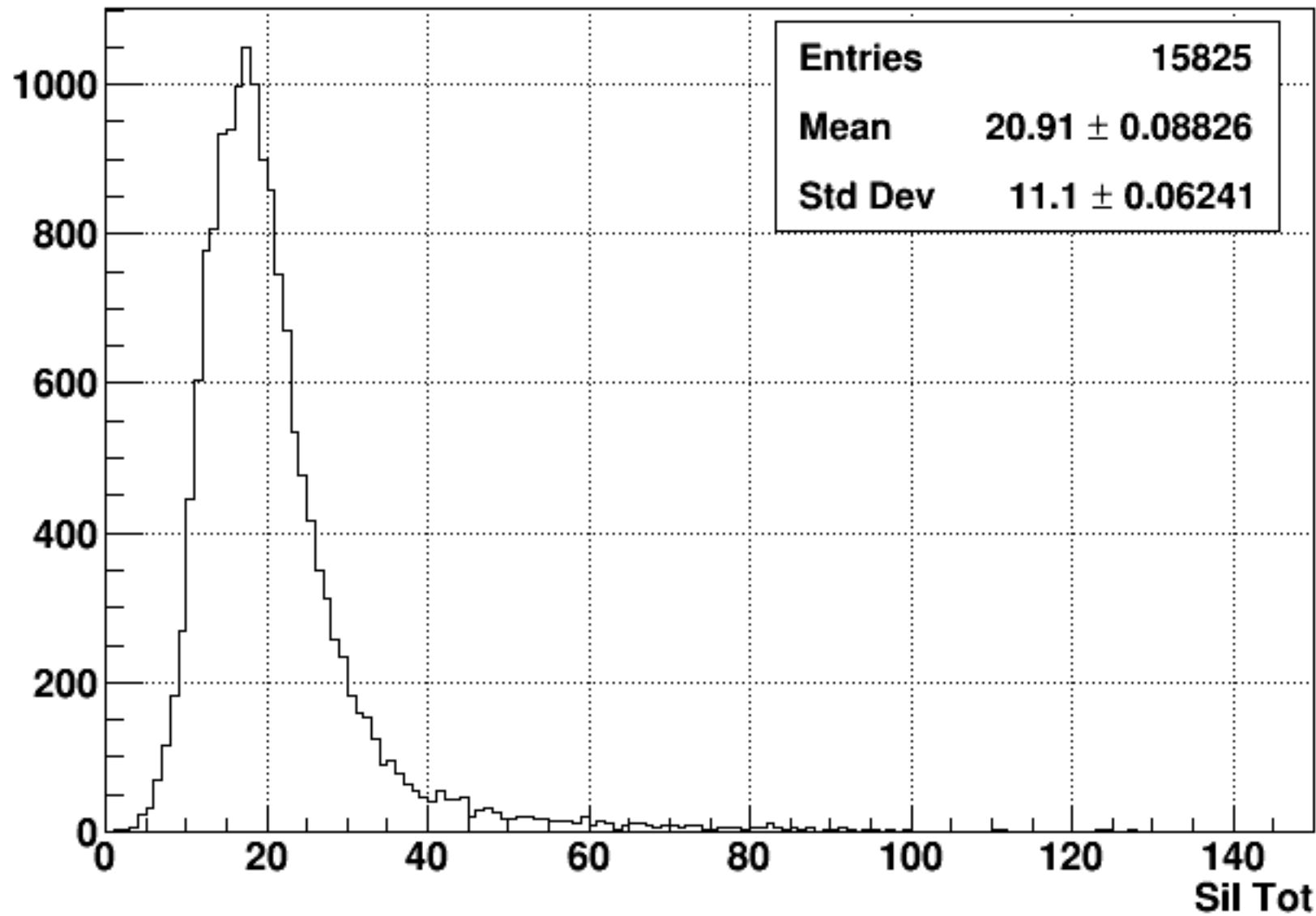


Electrons 100 GeV -  $\Delta E/E = 1.7\%$

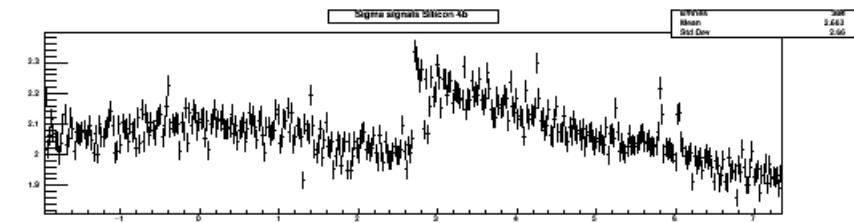
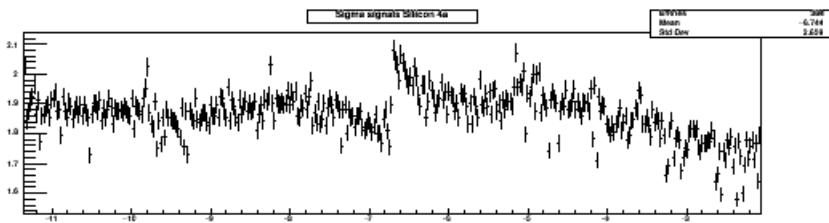
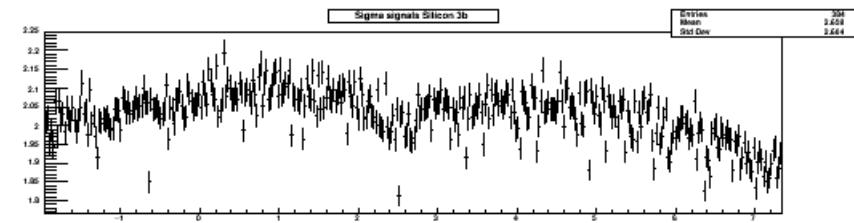
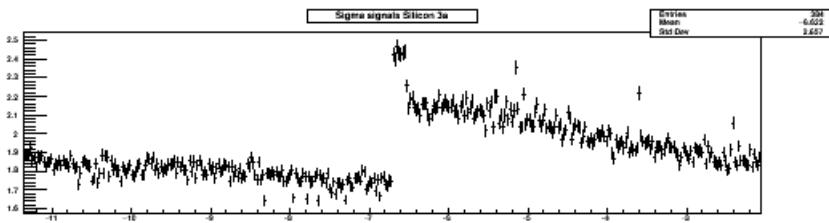
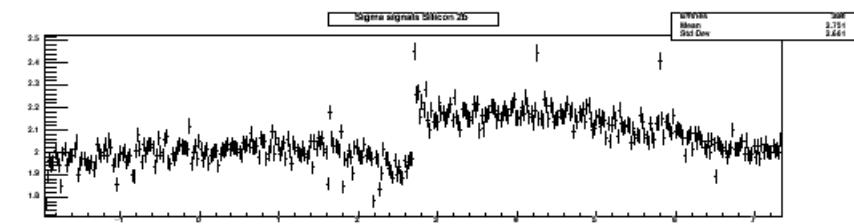
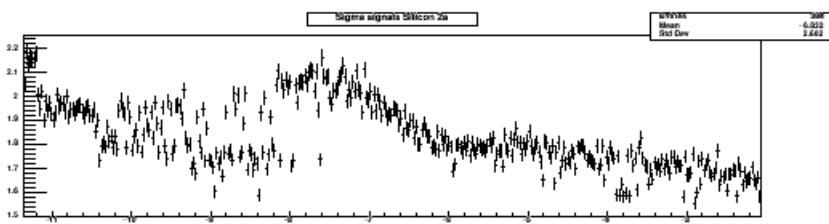
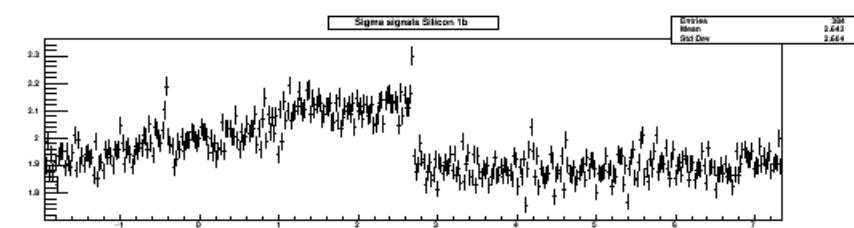
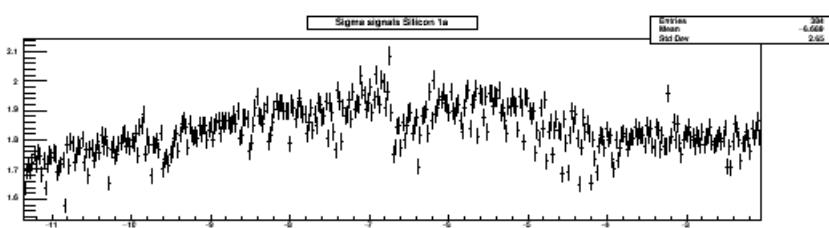
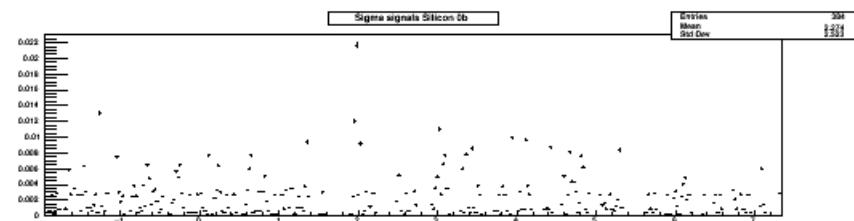
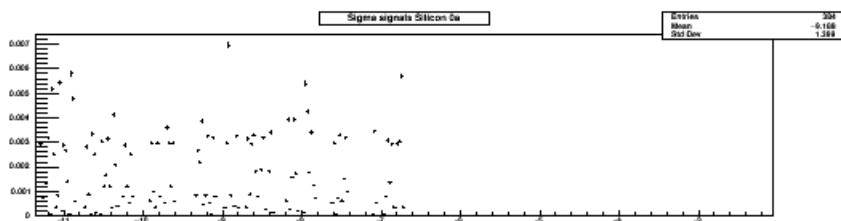
Entries	60000
Mean	4020
Std Dev	89.7



# Muons 200 GeV – m.i.p. signal



# Noise signals

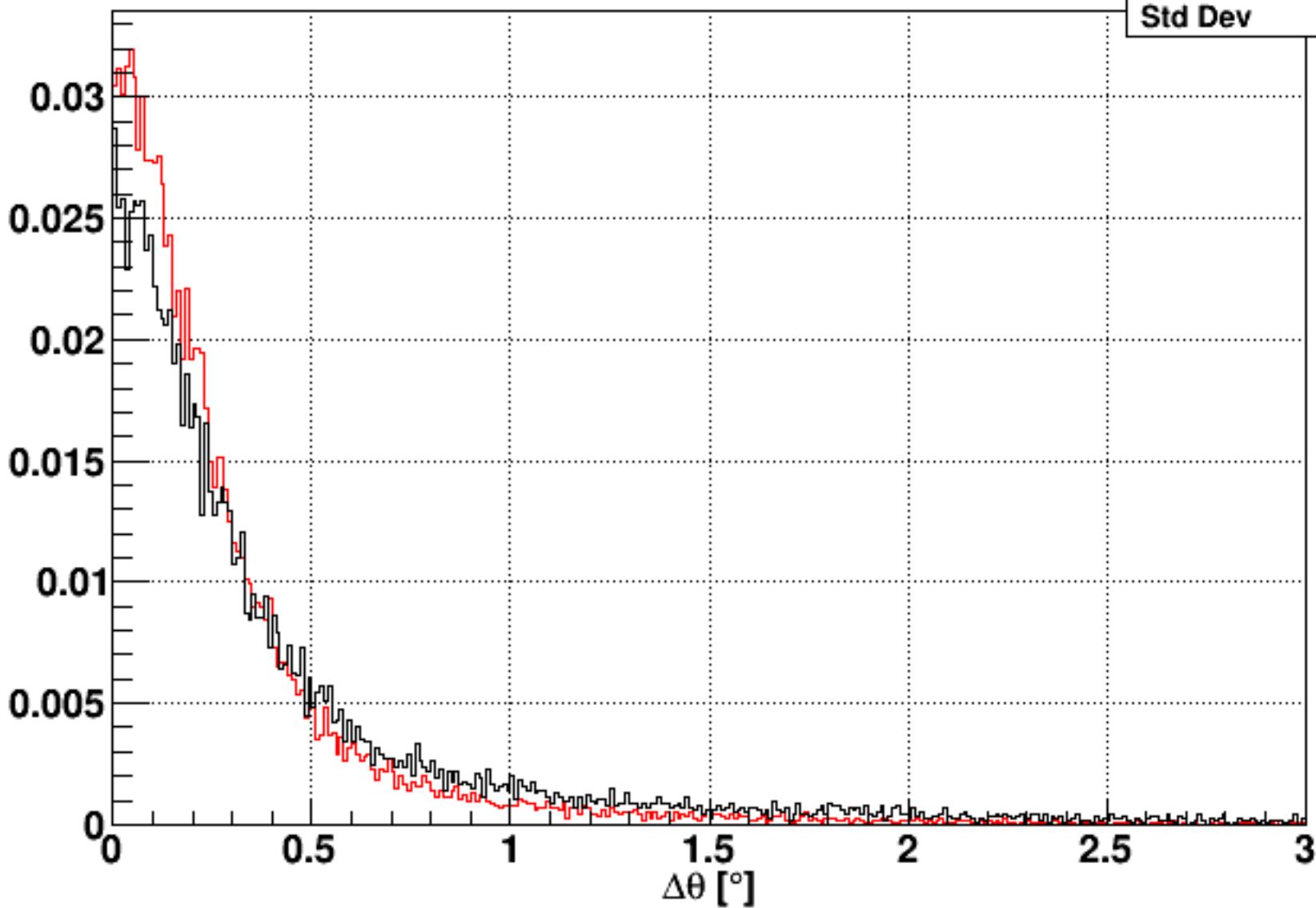


## Vertical alignment using muons

# ext.		Name		type		Value		Error +/-
0		Dx0		free		-0.08472032915818		0.0009268989724329
1		Dz0		fixed		0		
2		Phi0		free		-0.009385102120583		0.0002875310830828
3		Dx1		free		0.02387060759615		0.0009328625654035
4		Dz1		fixed		0		
5		Phi1		free		-0.006267789240592		0.0002894682868629
6		Dx2		fixed		0		
7		Dz2		fixed		0		
8		Phi2		fixed		0		
9		Dx3		free		0.05822466758163		0.0009169700633288
10		Dz3		fixed		0		
11		Phi3		free		-0.00311275274713		0.0002858124353363
12		Dx4		free		0.2443210449585		0.0009296262778723
13		Dz4		fixed		0		
14		Phi4		free		-0.008255691417788		0.000288997385846

# Electrons 10 GeV

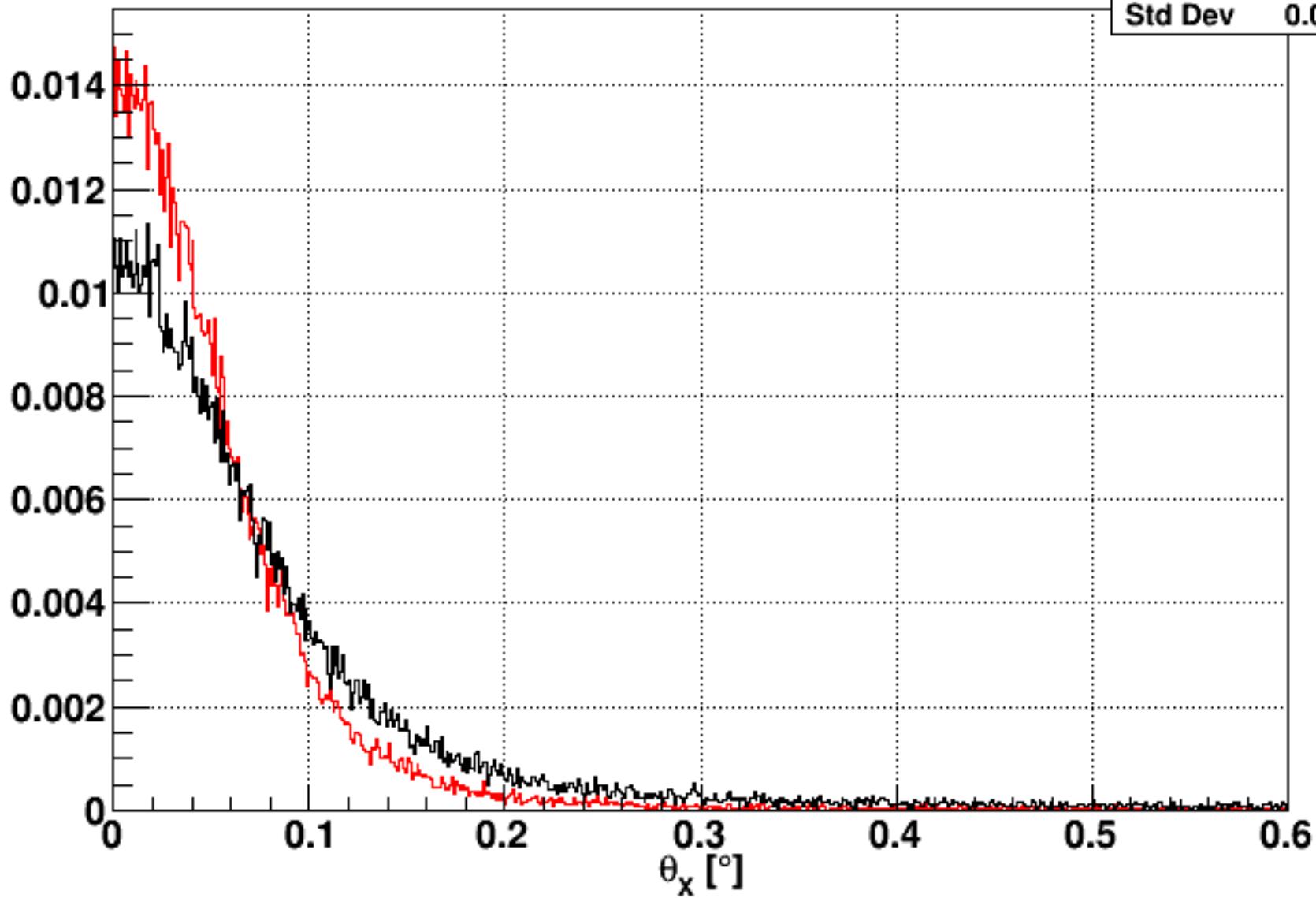
Entries	27345
Mean	0.2905
Std Dev	0.3536



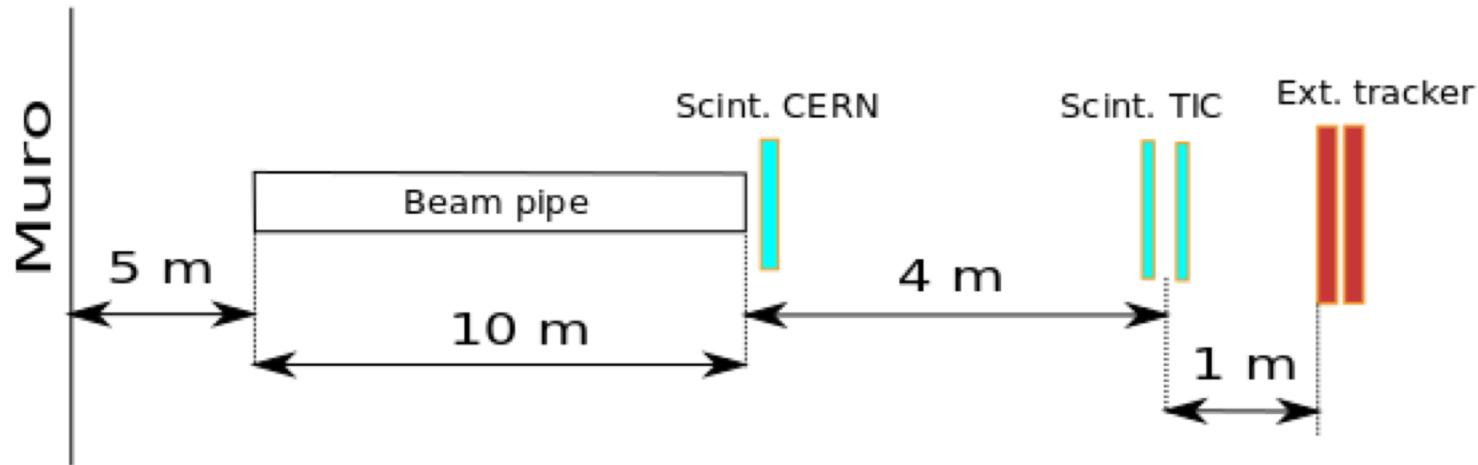
Electrons 100 GeV

Ang

Entries	52918
Mean	0.05375
Std Dev	0.05825



## Material in front of TIC



## Capacitive coupling effect (DAMPE)

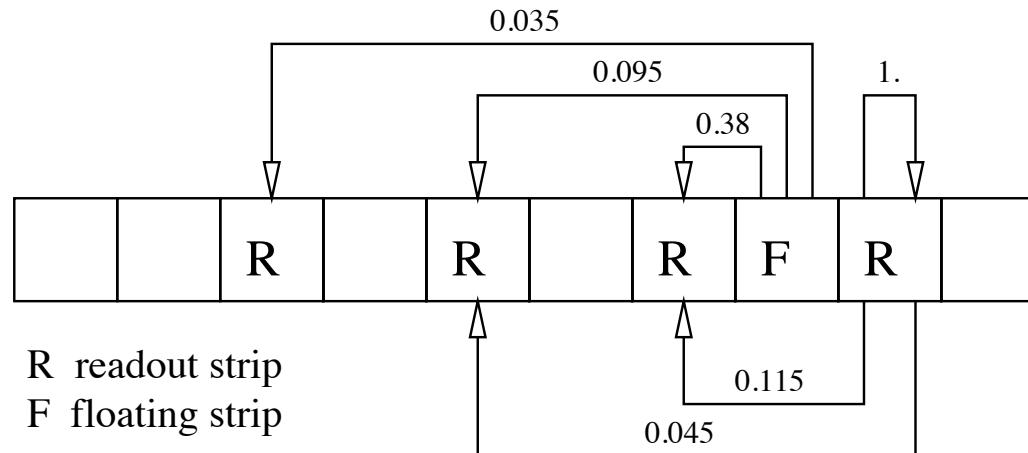
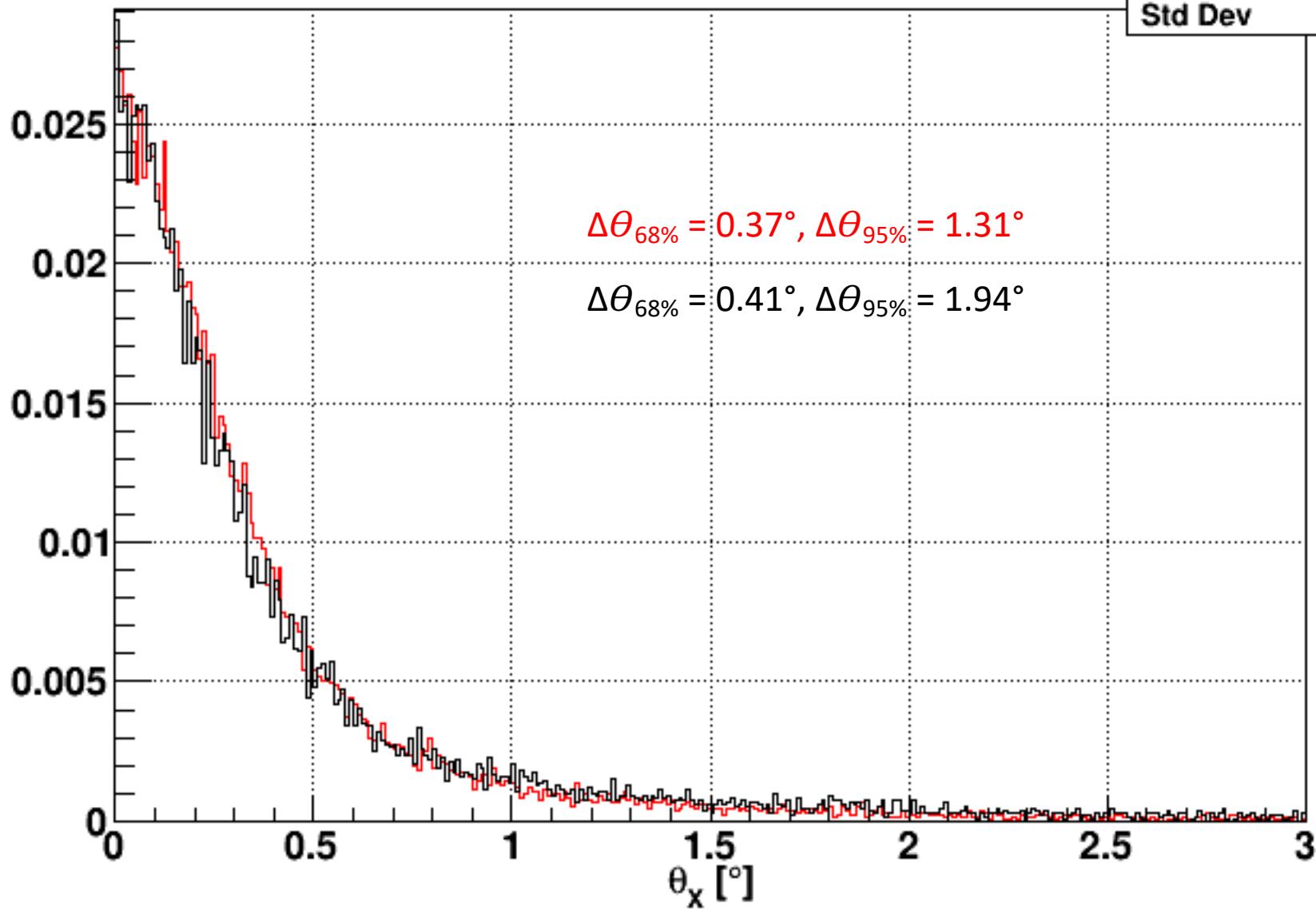


Fig. 19. Schematic representation of the implementation of the capacitive coupling in the simulation. The symmetric couplings on the right are not represented.

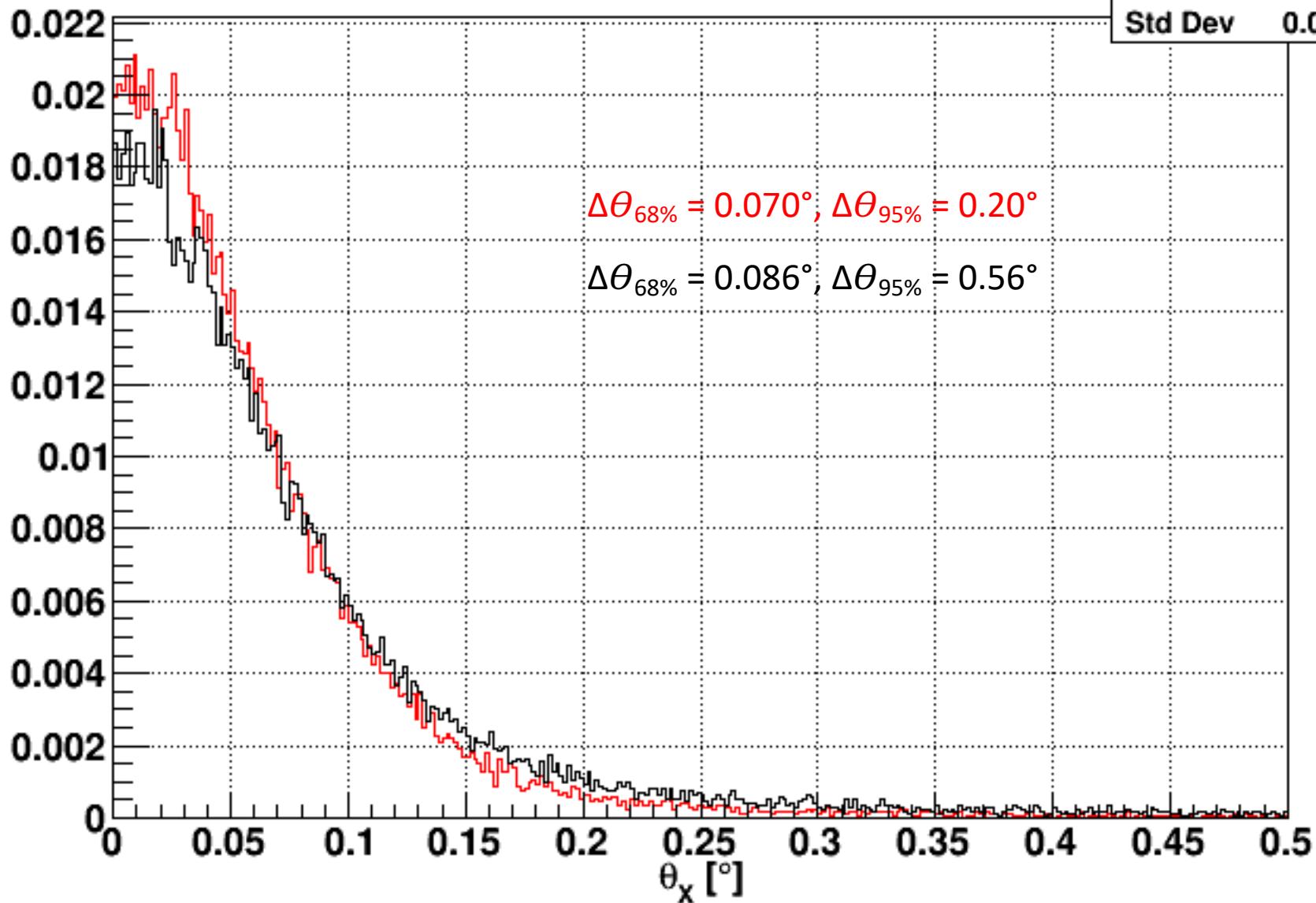
# Electrons 10 GeV

Entries	26352
Mean	0.3572
Std Dev	0.4193



# Electrons 100 GeV

Entries	50239
Mean	0.05967
Std Dev	0.05868

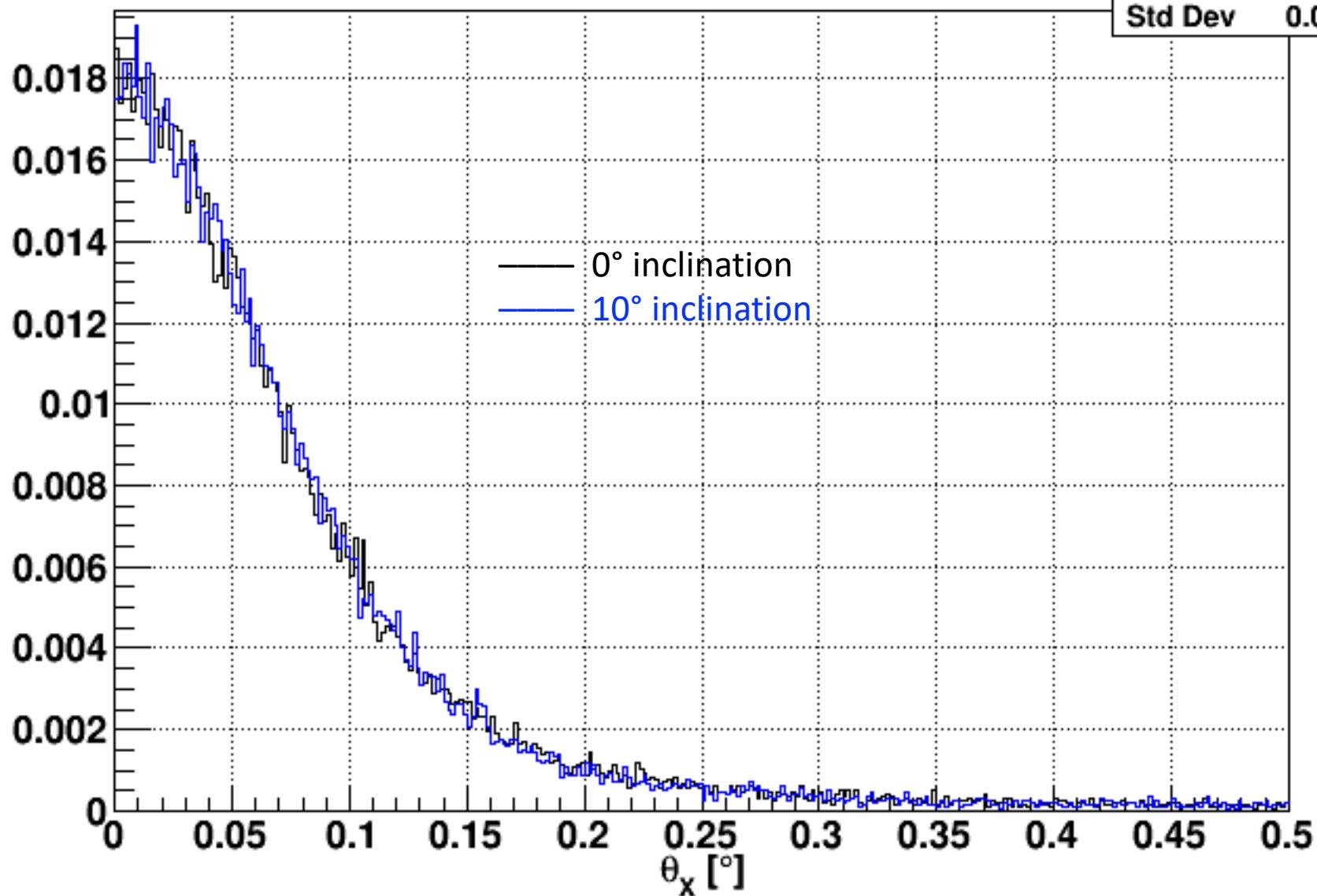


## Alignment using also 10° muons

# ext.		Name		type		Value		Error +/-
0		Dx0		free		-0.08413061461445		0.002666040820205
1		Dz0		fixed		0		
2		Phi0		free		-0.009795048562745		0.0008088339736063
3		Dx1		free		0.02402663034965		0.002668840221461
4		Dz1		free		1.383699112222		0.03543488399338
5		Phi1		free		-0.006300567153765		0.0008102913261592
6		Dx2		fixed		0		
7		Dz2		free		0.8033655900058		0.03364003572198
8		Phi2		fixed		0		
9		Dx3		free		0.05873699643922		0.002629188890745
10		Dz3		free		0.3962668082809		0.03224958097955
11		Phi3		free		-0.003178156640998		0.0008022143865164
12		Dx4		free		0.2450468262604		0.00266990278797
13		Dz4		fixed		0		
14		Phi4		free		-0.008594813537332		0.0008107030353915
15		Ang		free		-0.1551179888944		0.0003019476711735

# Electrons 100 GeV

Entries	43326
Mean	0.07397
Std Dev	0.07646



## Lavoro futuro...

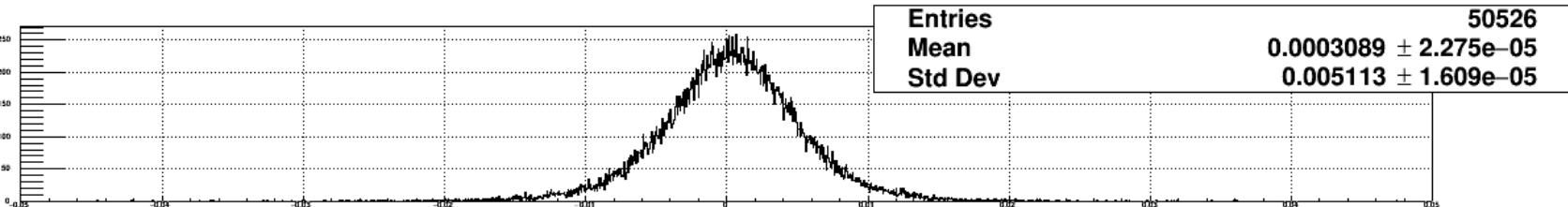
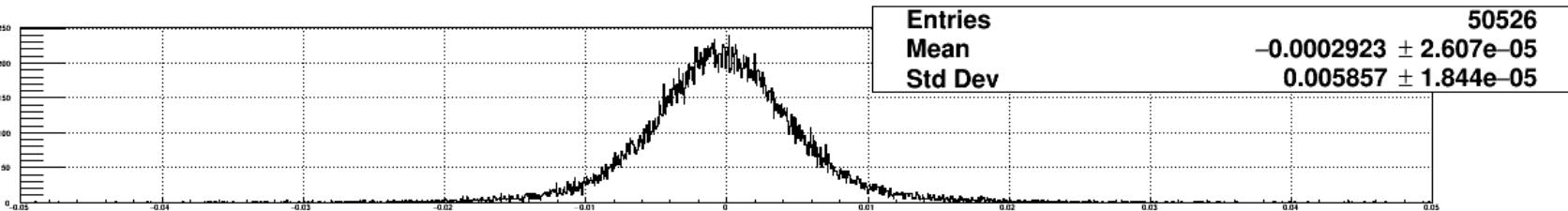
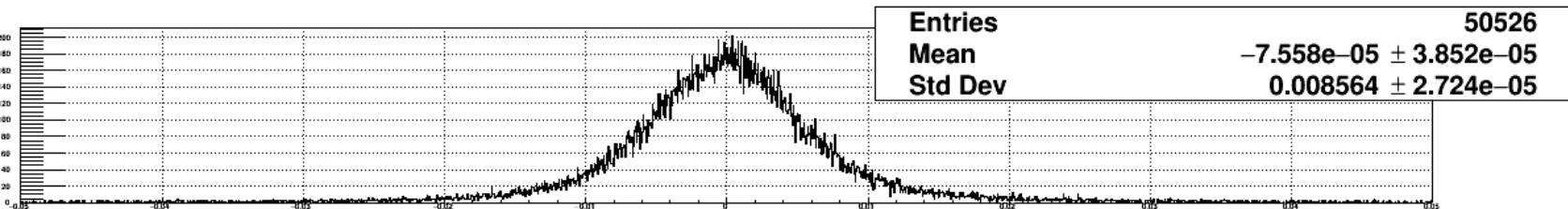
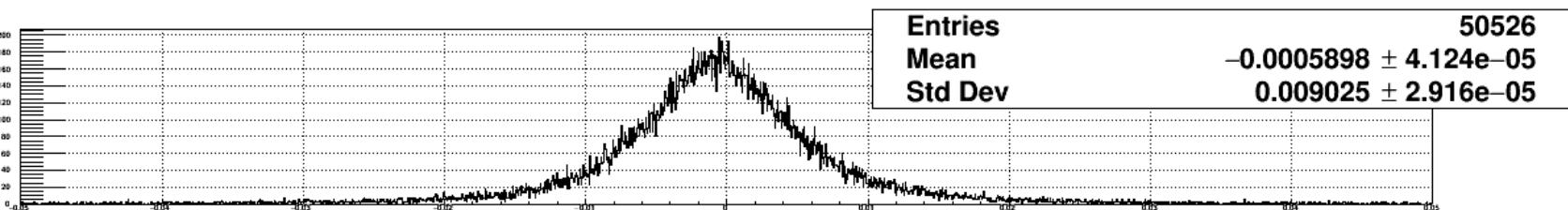
### Continuare l'analisi dati

- elettroni a 50 GeV al SPS (solo far girare i programmi)
- capire la leggera discrepanza con la simulazione
- elettroni a 1 e 5 GeV al PS (vedere se l'allineamento va bene + nuova simulazione)
- provare a 20° (la vedo difficile...)
- altro?

### Proporre ufficialmente TIC per HERD?

- sì o no?
- studio di ottimizzazione del rivelatore:
  - numero di piani
  - pitch
  - distanze
  - spessori e materiali dei cristalli
  - lettura dei segnali
  - meccanica

# Electrons 100 GeV



# Electrons 100 GeV

