



University
Mohammed I



Physics Laboratory of
Matter and Radiation



Faculty of Sciences
Oujda

ATLAS Forward Calorimeter New Analysis

*KTH/FSO meeting
11/11/2015*

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Analysis

1. Electrons

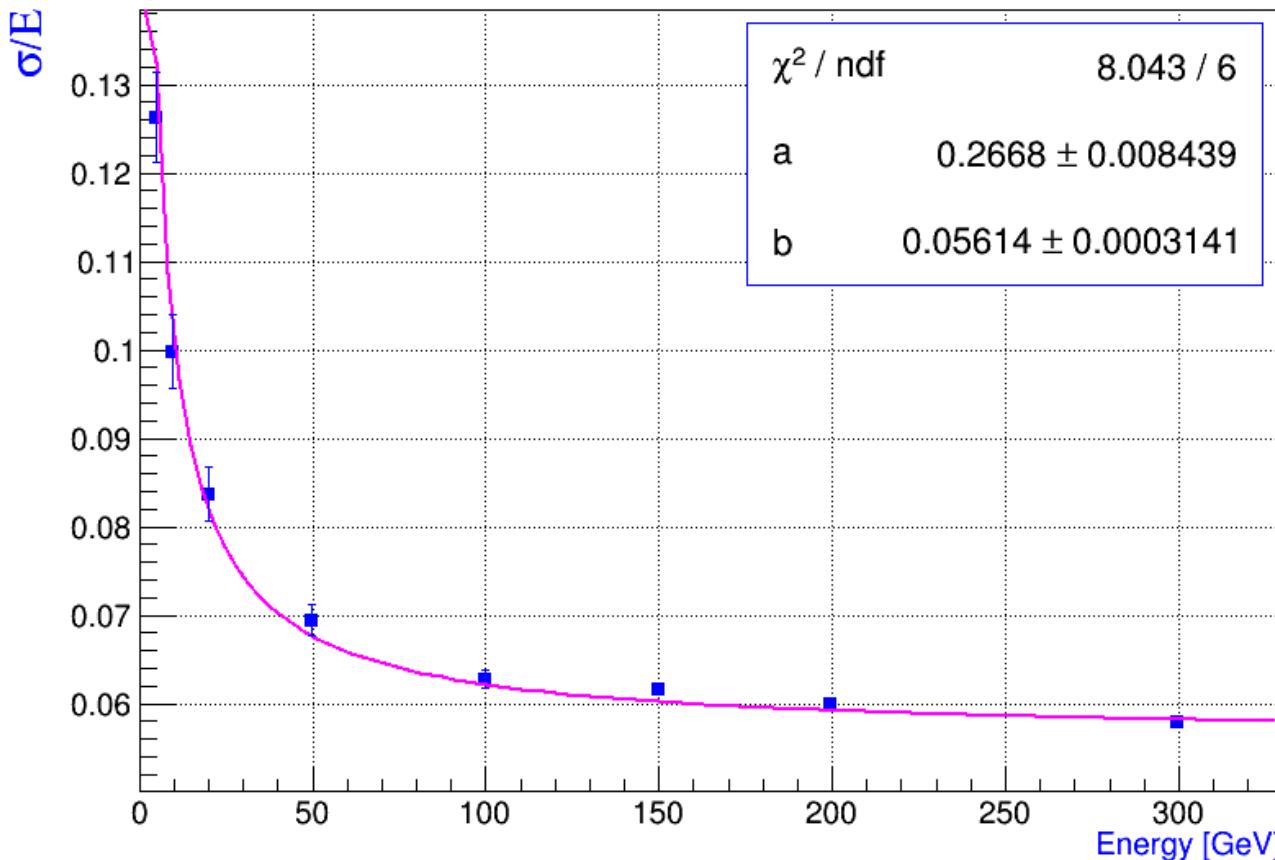
- Energy Resolution
- η Position resolution
- φ Position resolution

2. Pions

- Energy Resolution
- η Position resolution
- φ Position resolution

Electrons – Energy Resolution

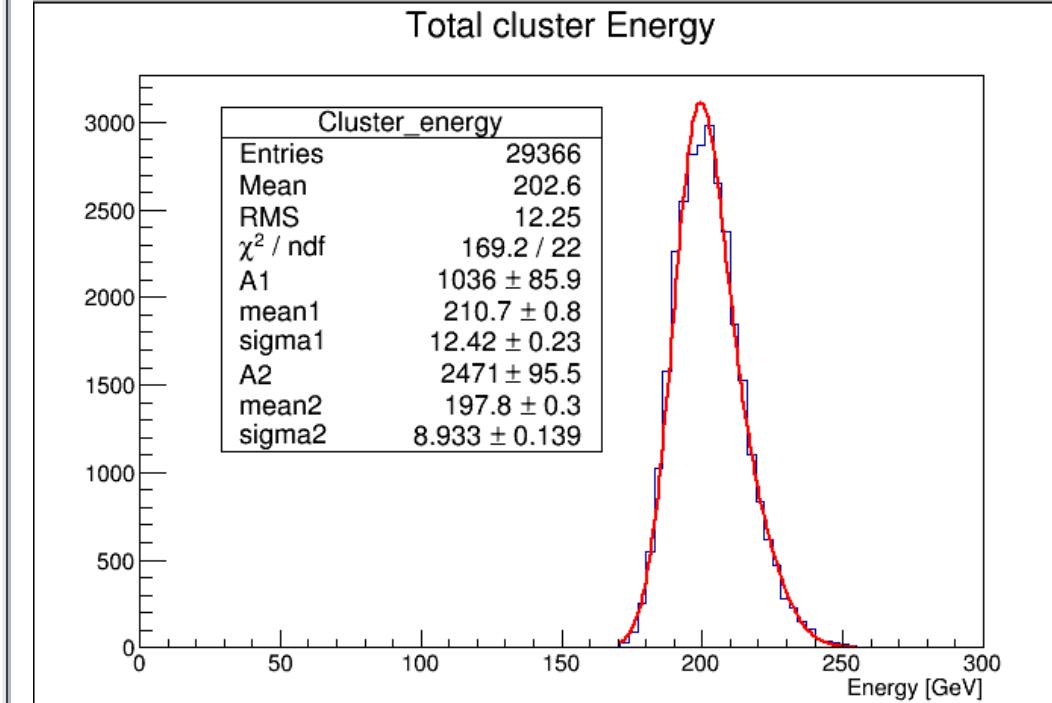
Electron Energy Resolution



$$a = 26.7\% \sqrt{\text{GeV}}$$

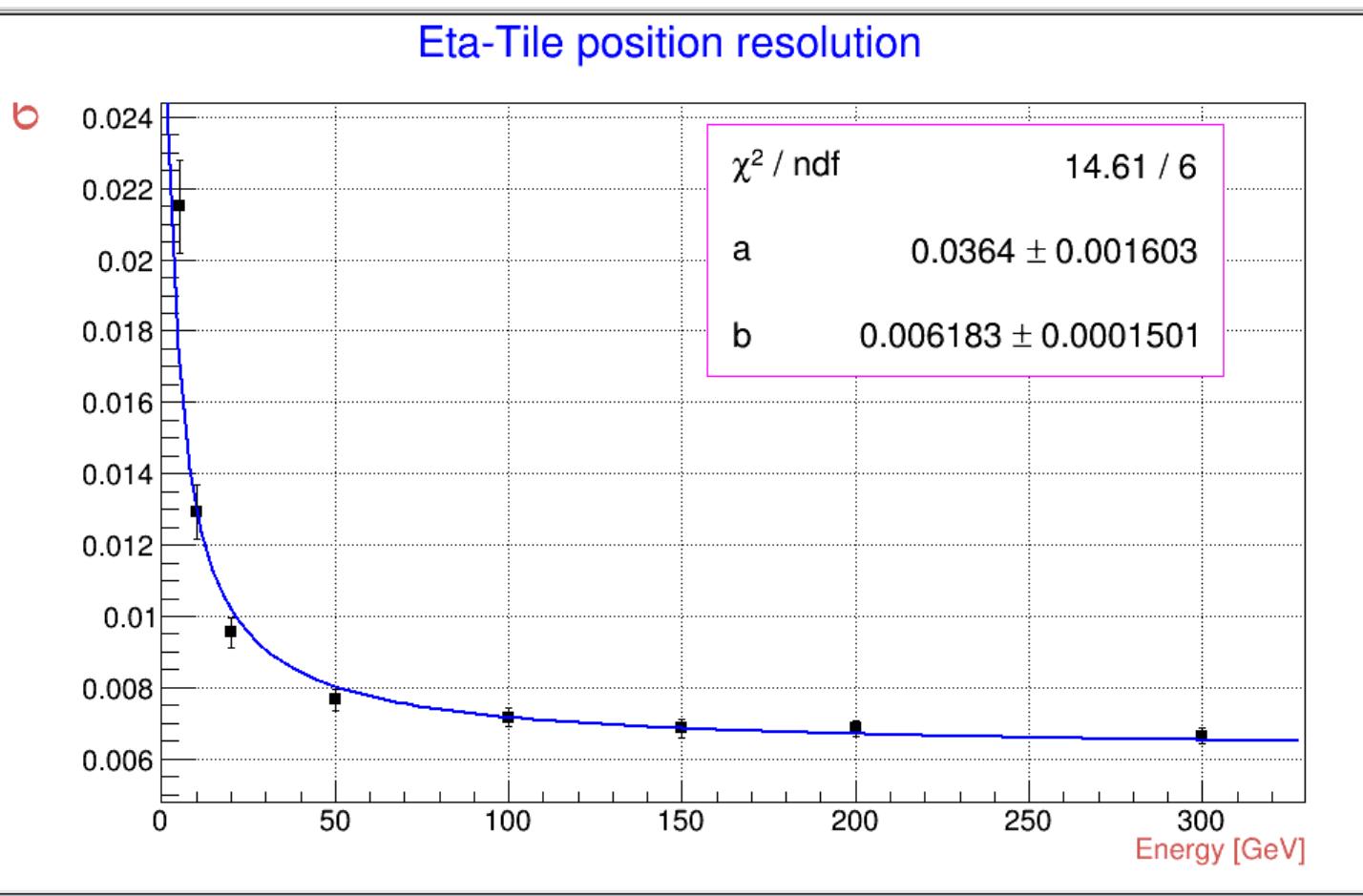
$$b = 5.61\%$$

200 GeV



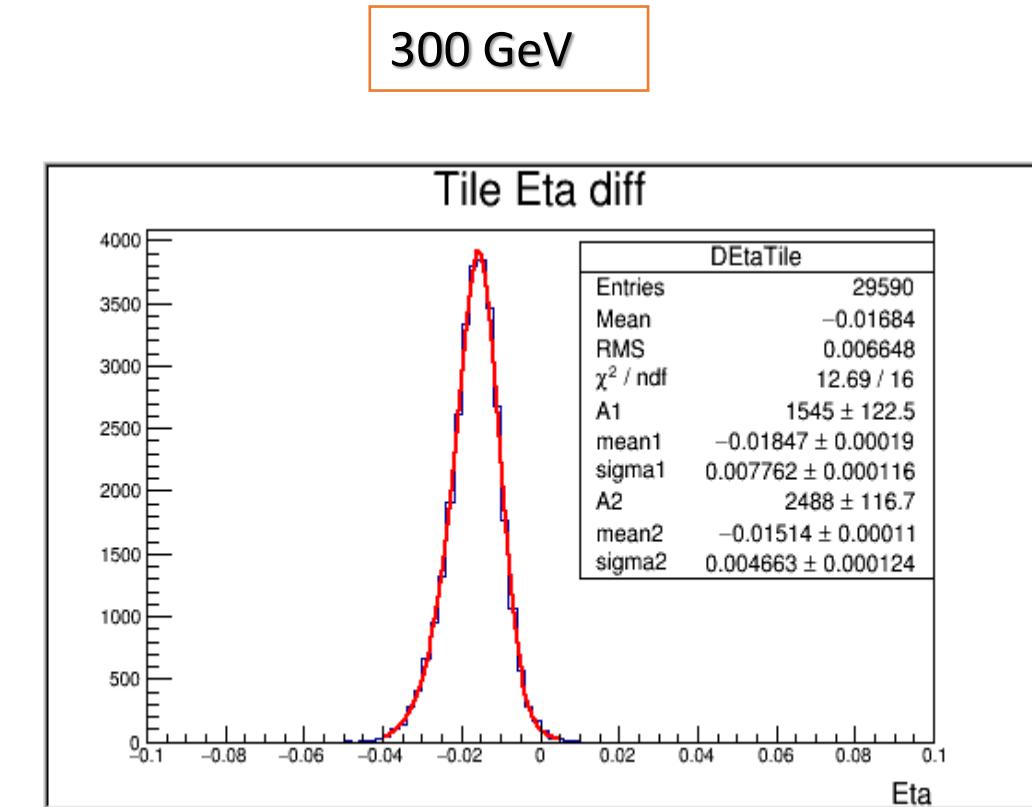
$$\frac{\sigma}{E} = (0.059 \pm 0.00049) \sqrt{\text{GeV}}$$

Electrons – η tile Position Resolution



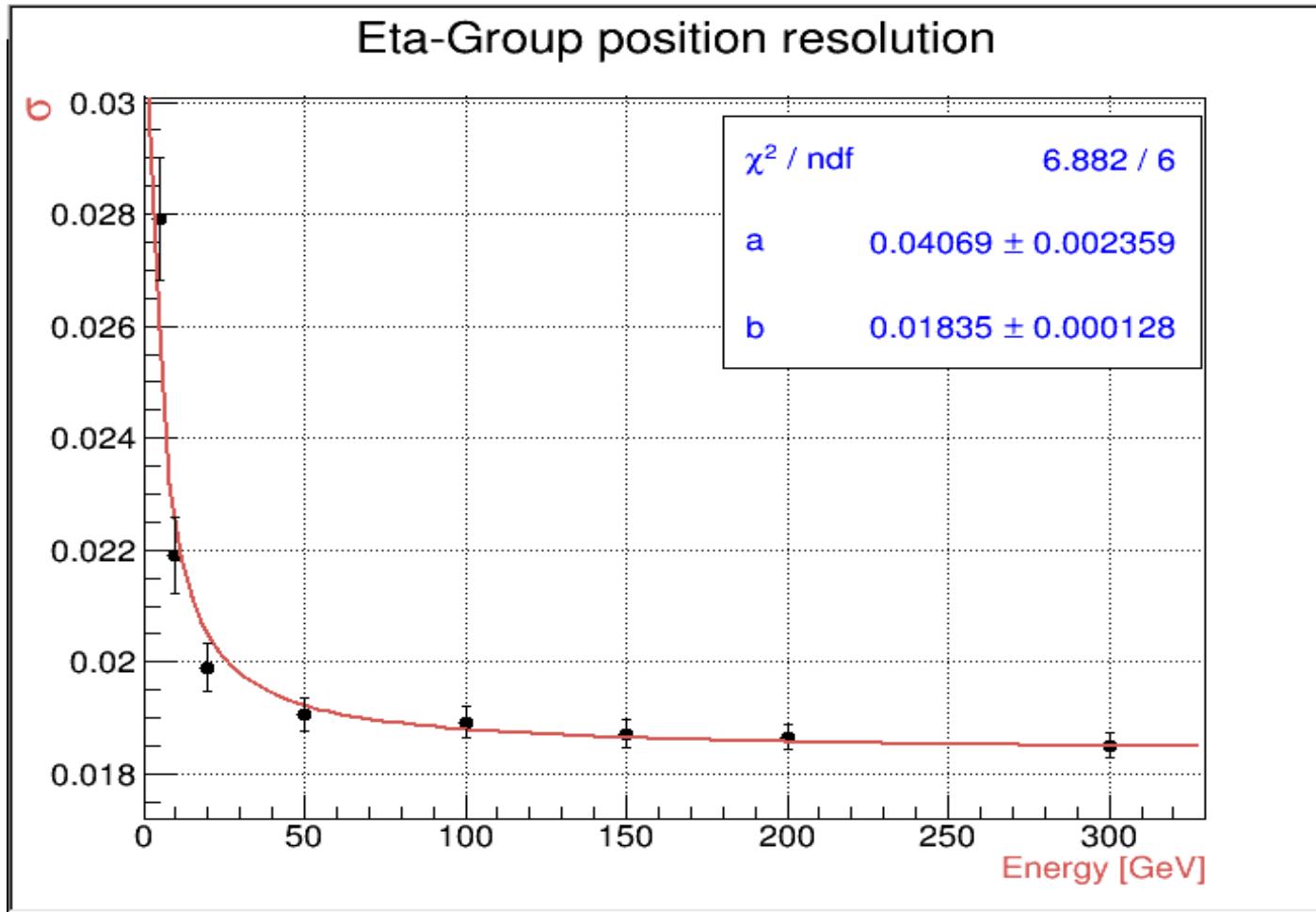
$$a = (0.0364 \pm 0.001) \sqrt{\text{GeV}}$$

$$b = 0.006183 \pm 0.00015$$



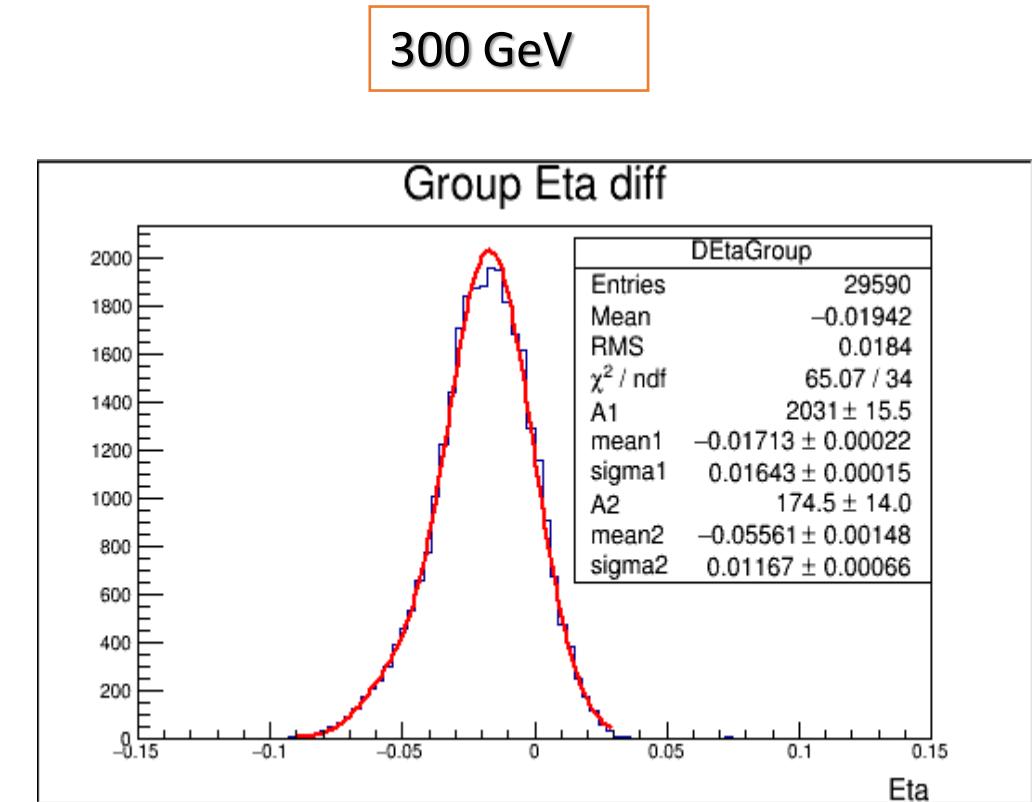
$$\sigma_\eta = 0.06639 \pm 0.000231$$

Electrons – η group Position Resolution



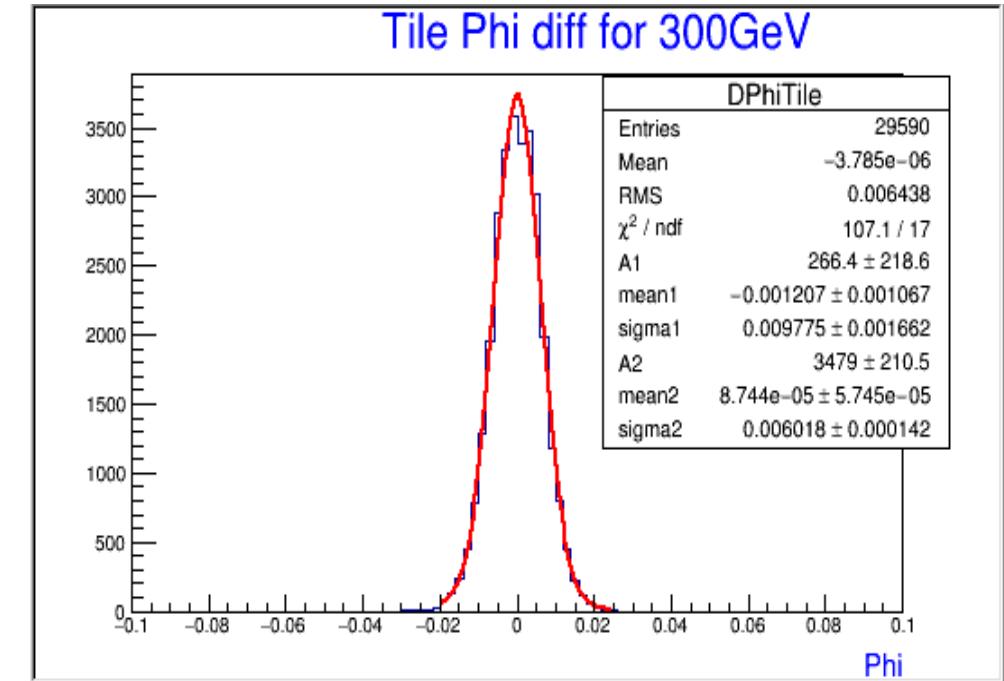
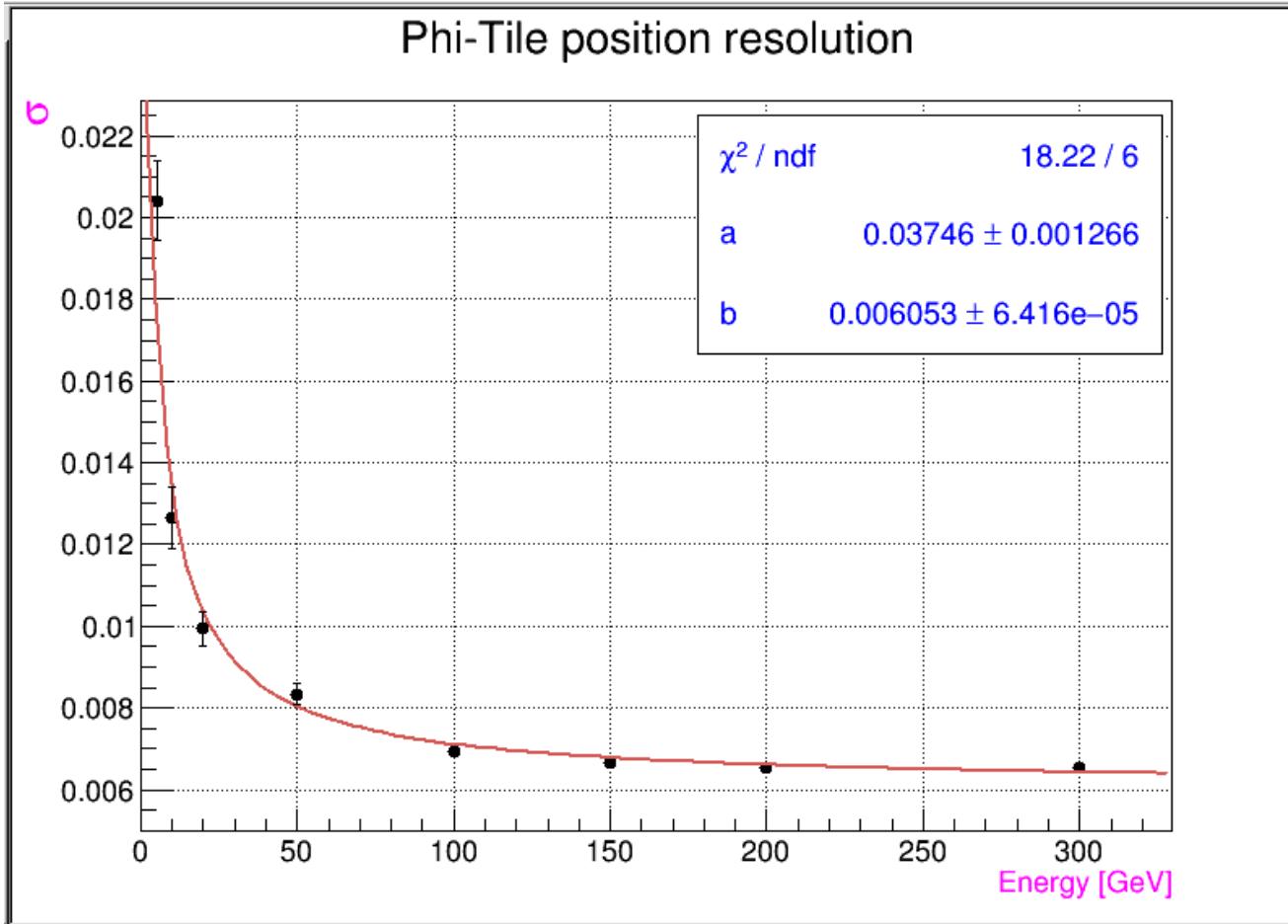
$$a = (0.0407 \pm 0.00236) \sqrt{\text{GeV}}$$

$$b = 0.0183 \pm 0.00013$$



$$\sigma_\eta = 0.018505 \pm 0.000221$$

Electrons – φ tile Position Resolution

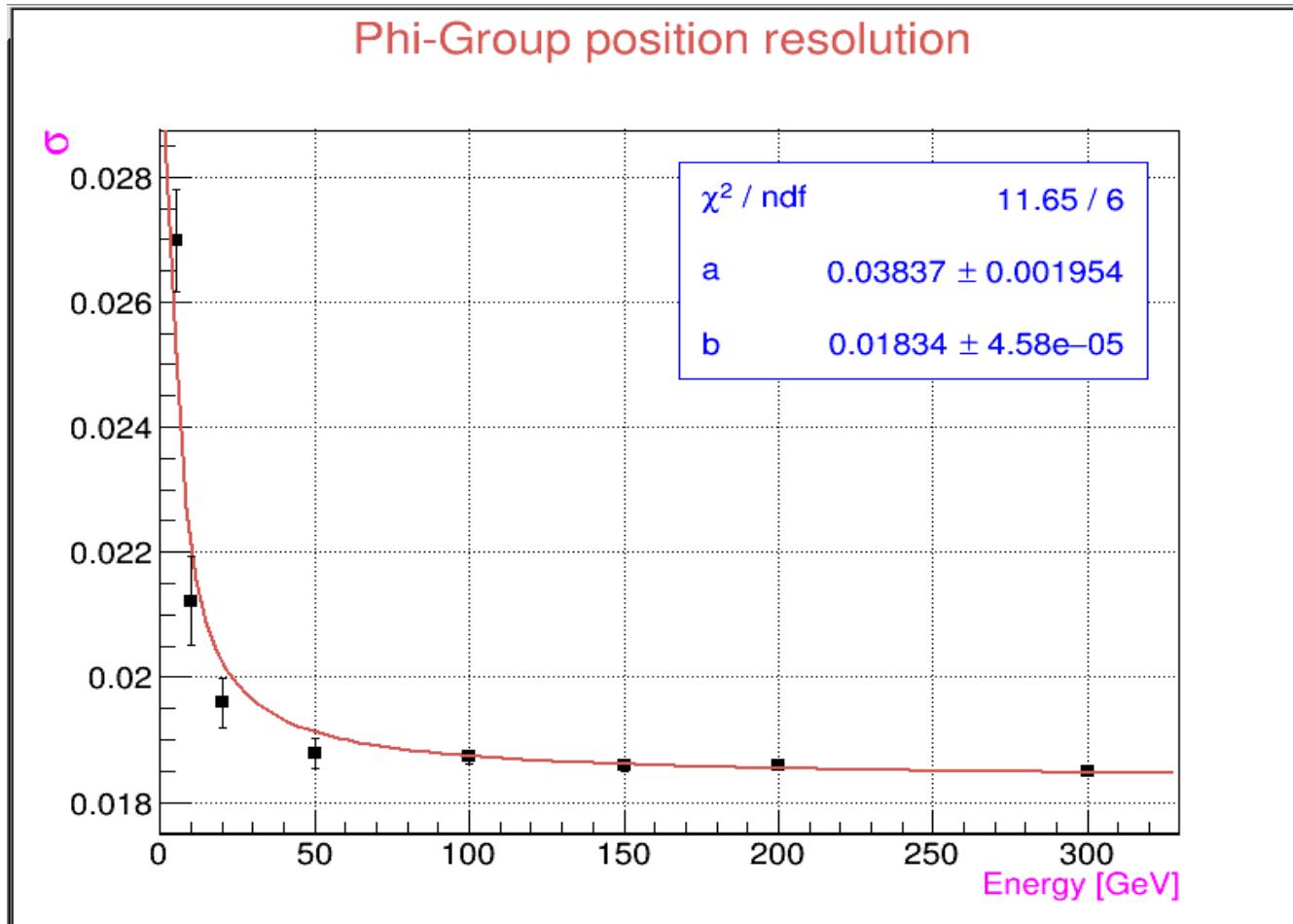


$$\sigma_\varphi = 6.55 \pm 0.065 \text{ mrad}$$

$$a = 37.46 \text{ mrad} \sqrt{\text{GeV}}$$

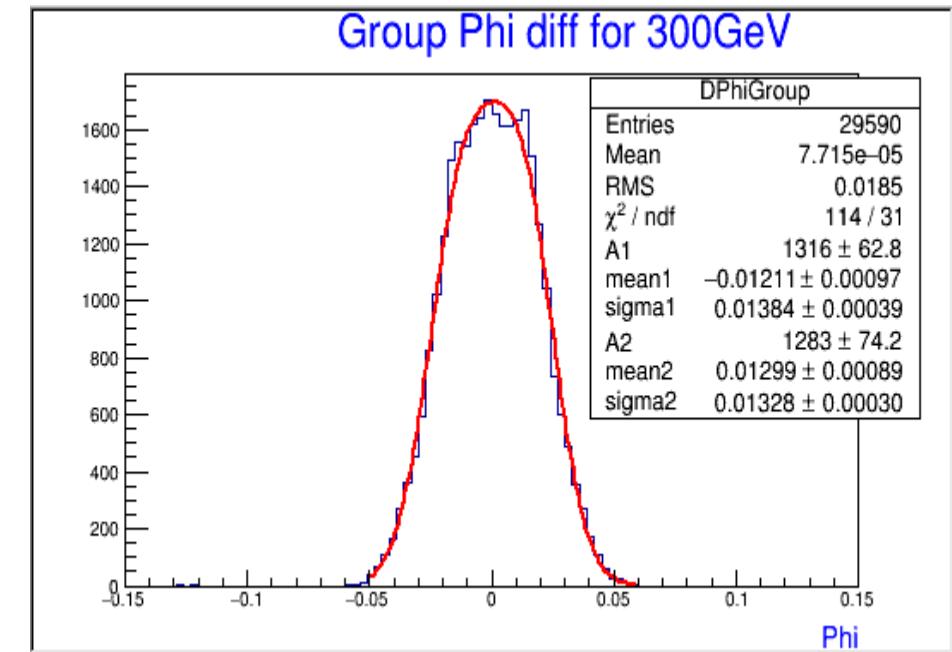
$$b = 6.05 \text{ mrad}$$

Electrons – φ group Position Resolution



$$a = 38.37 \text{ mrad} \sqrt{\text{GeV}}$$

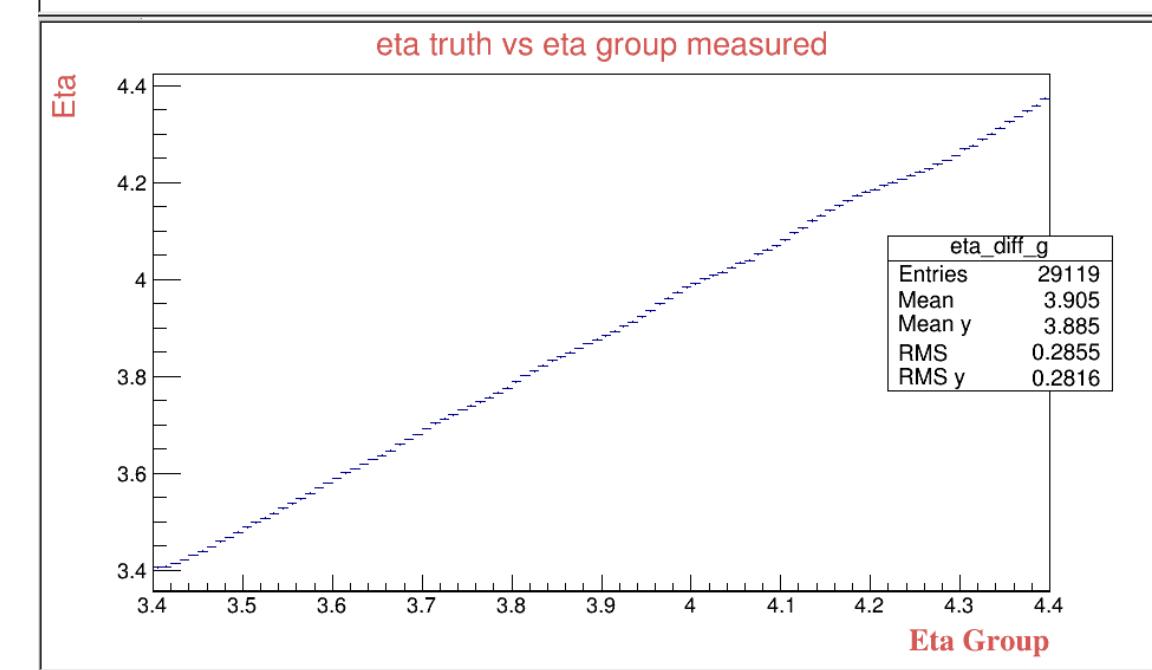
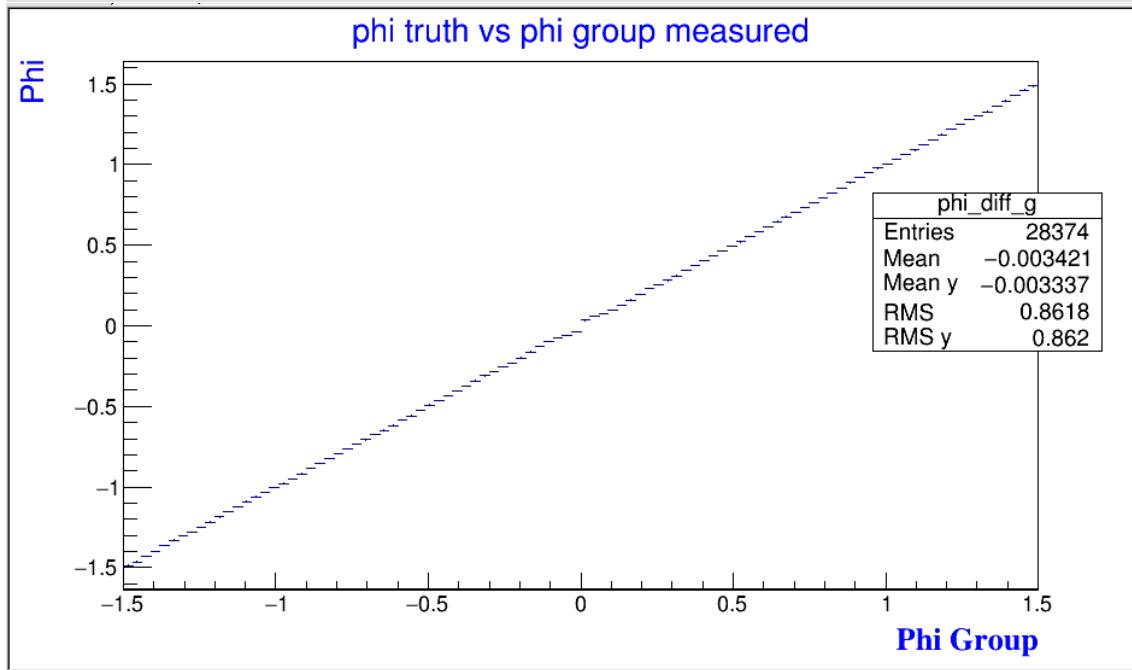
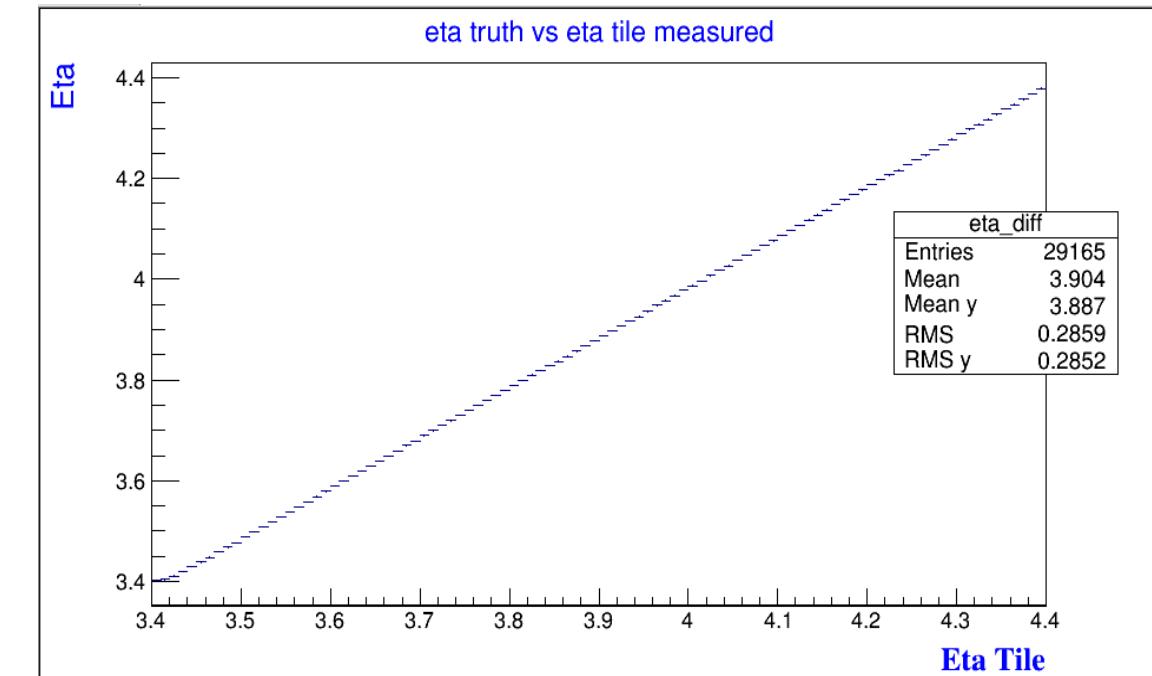
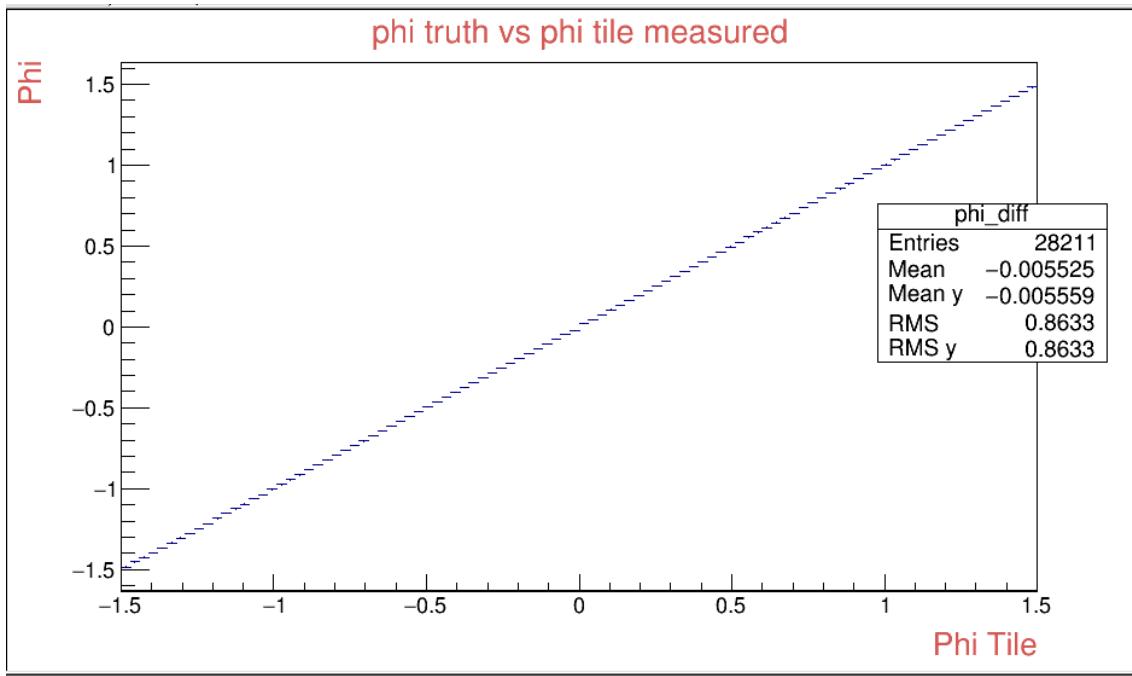
$$b = 18.34 \text{ mrad}$$



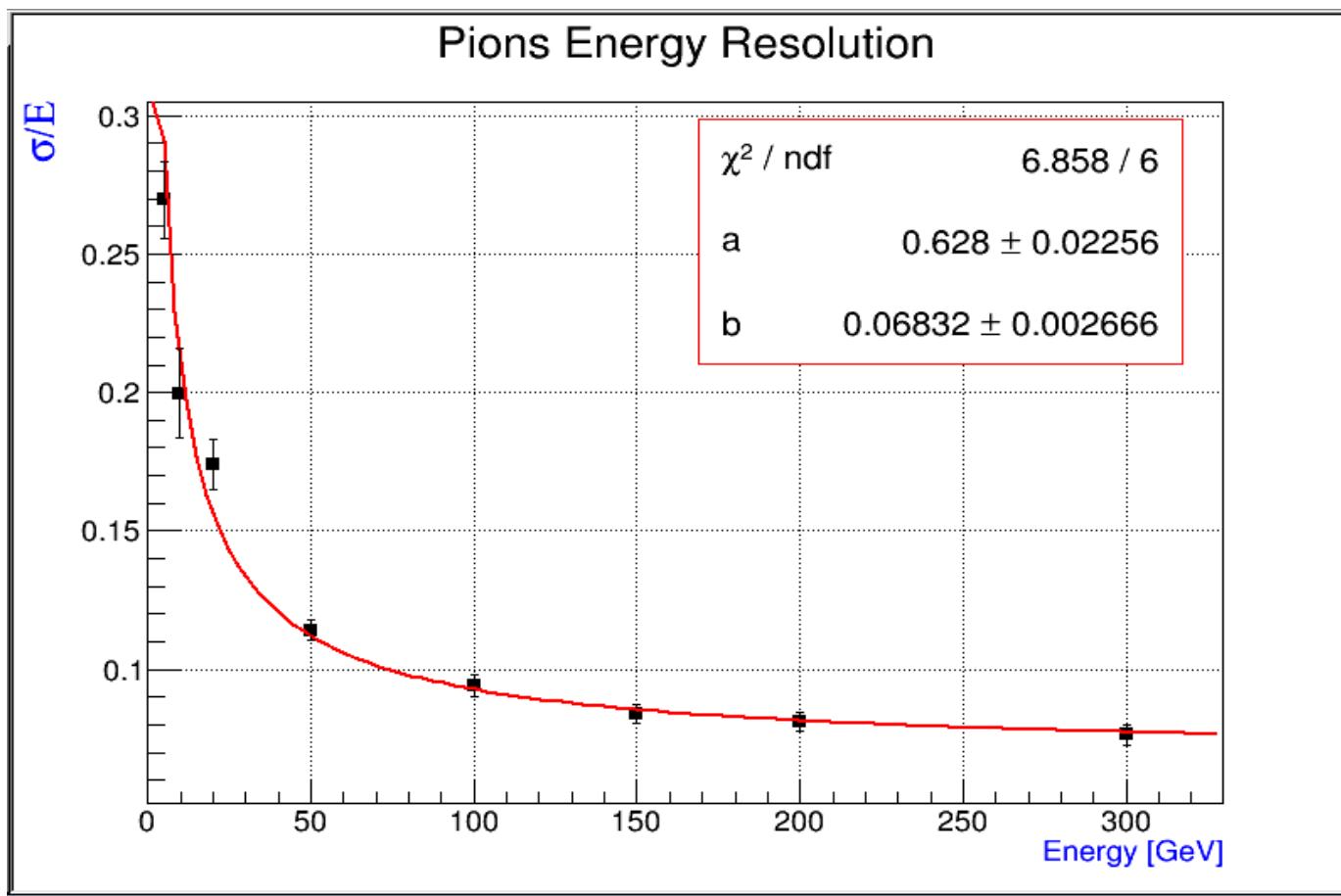
$$\sigma_\varphi = 18.49 \pm 0.05 \text{ mrad}$$



Electrons 300 GeV



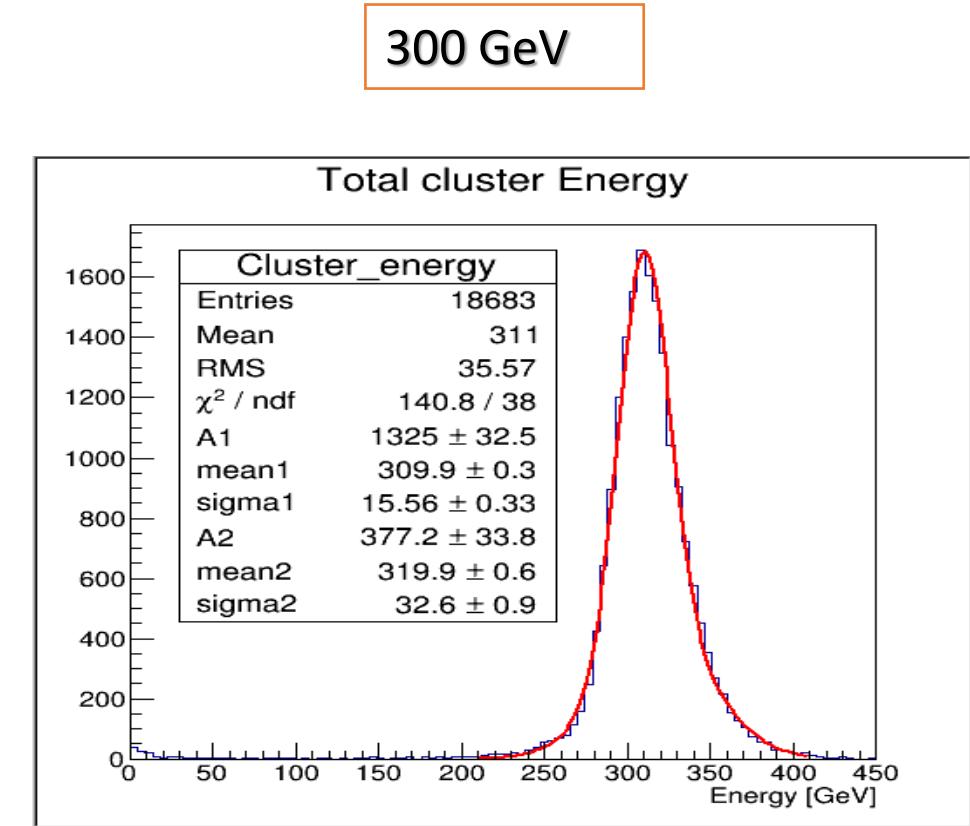
Pions – Energy Resolution



$$a = 62.8\% \sqrt{\text{GeV}}$$

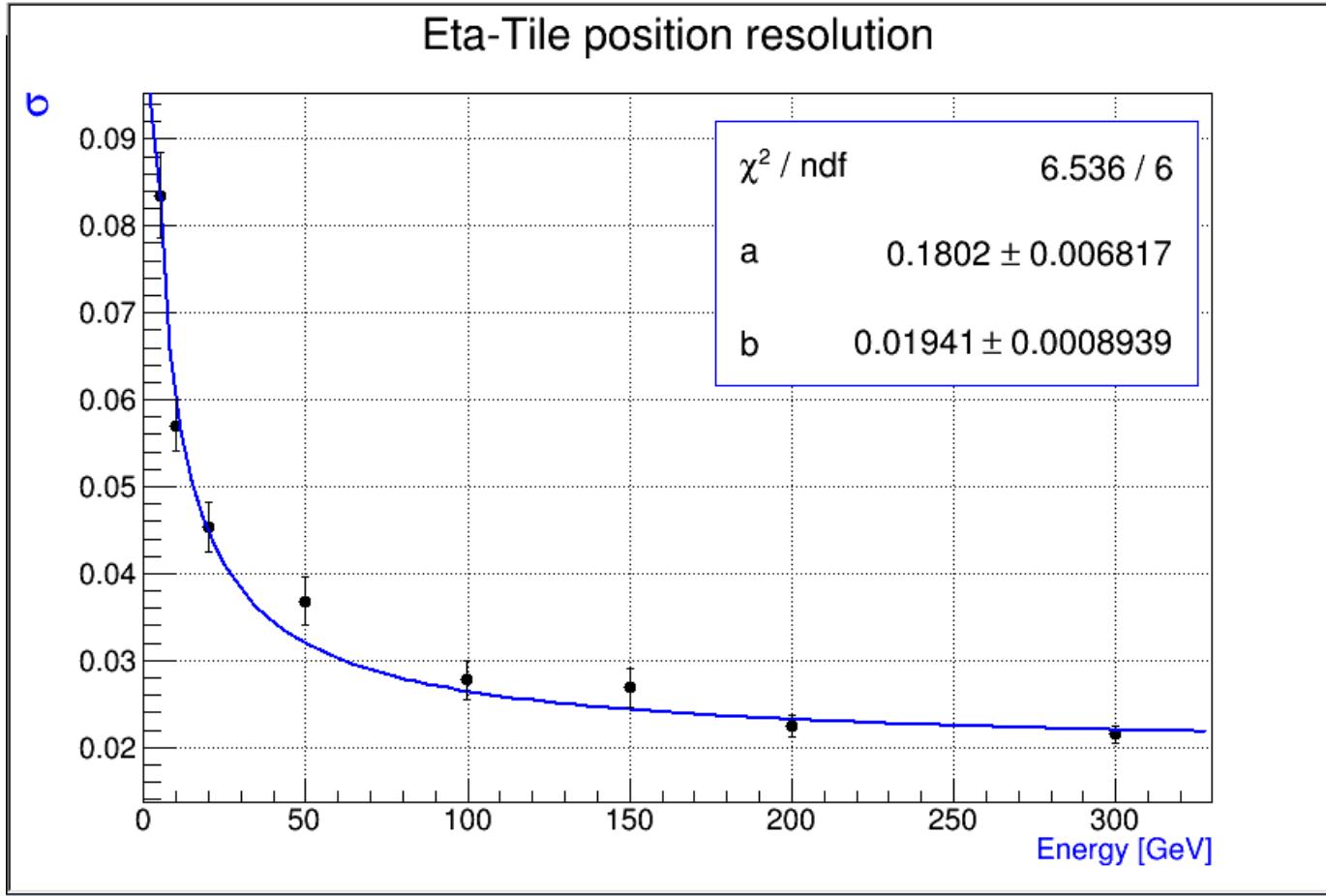
$$b = 6.8\%$$

300 GeV



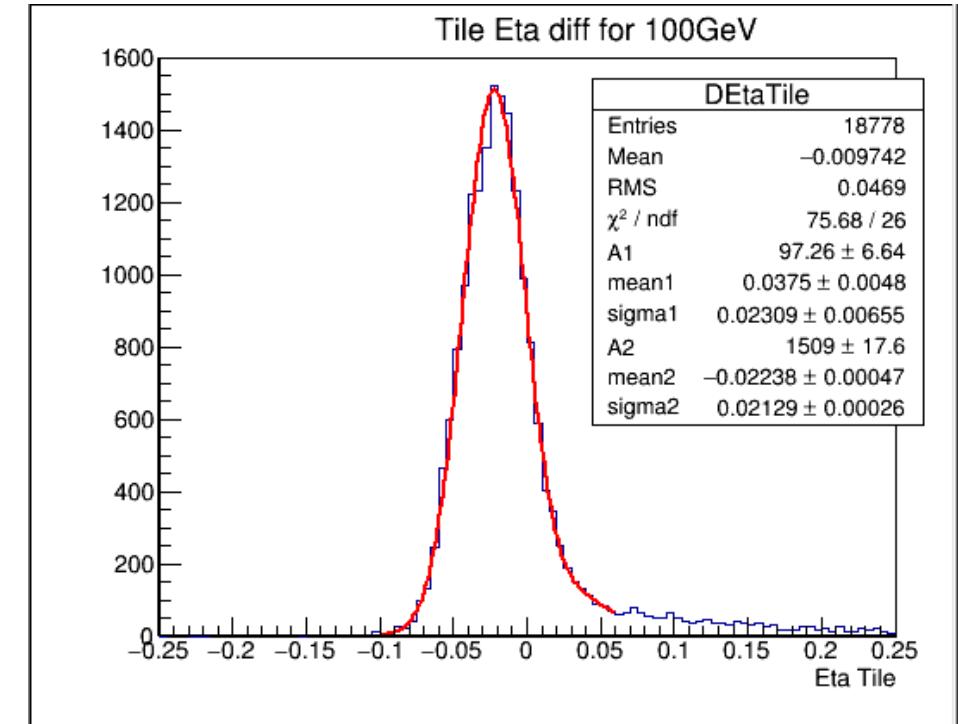
$$\frac{\sigma}{E} = (0.076 \pm 0.003) \sqrt{\text{GeV}}$$

Pions – η tile Position Resolution



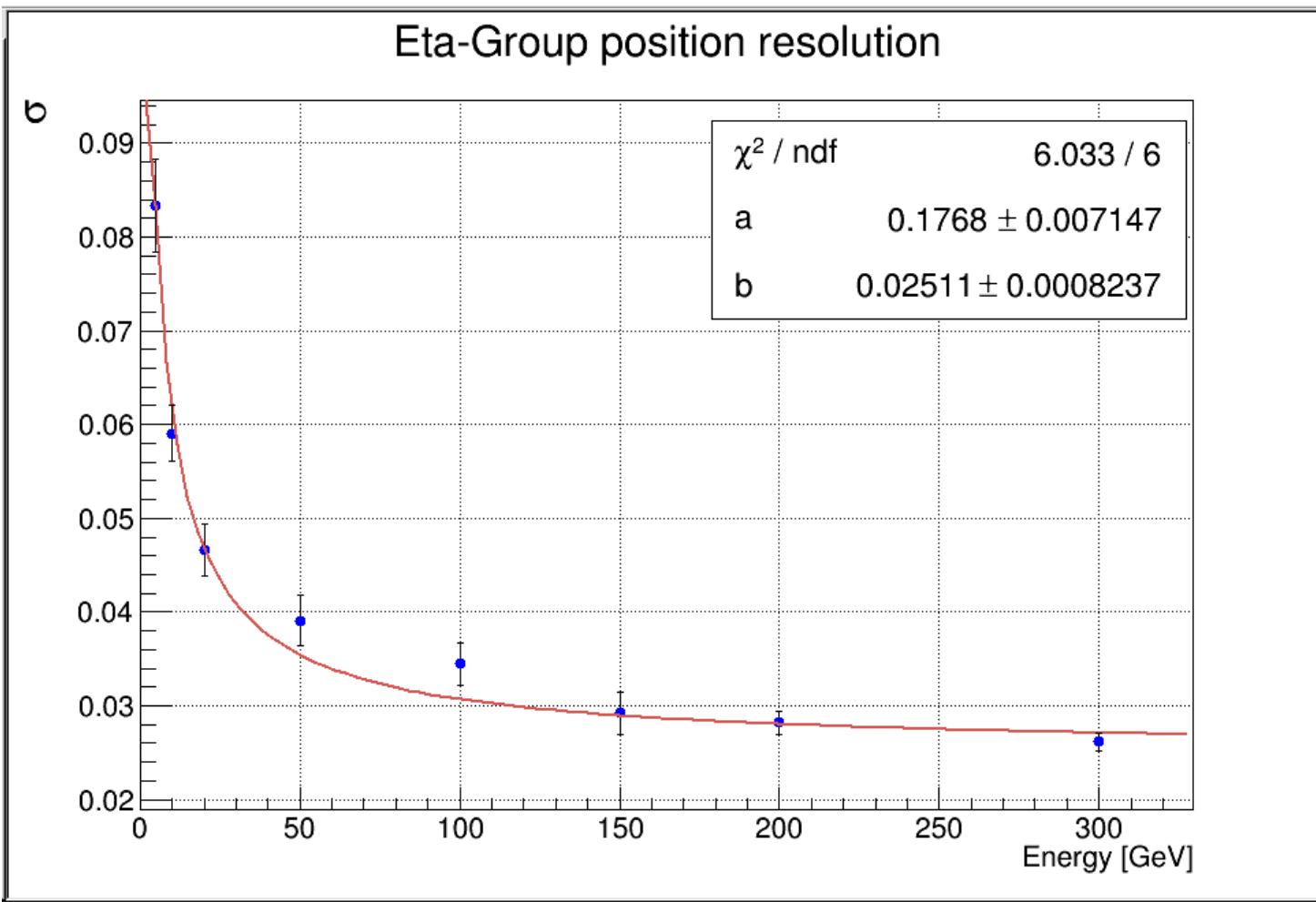
$$a = (0.18 \pm 0.007) \sqrt{\text{GeV}}$$

$$b = 0.0194 \pm 0.0009$$



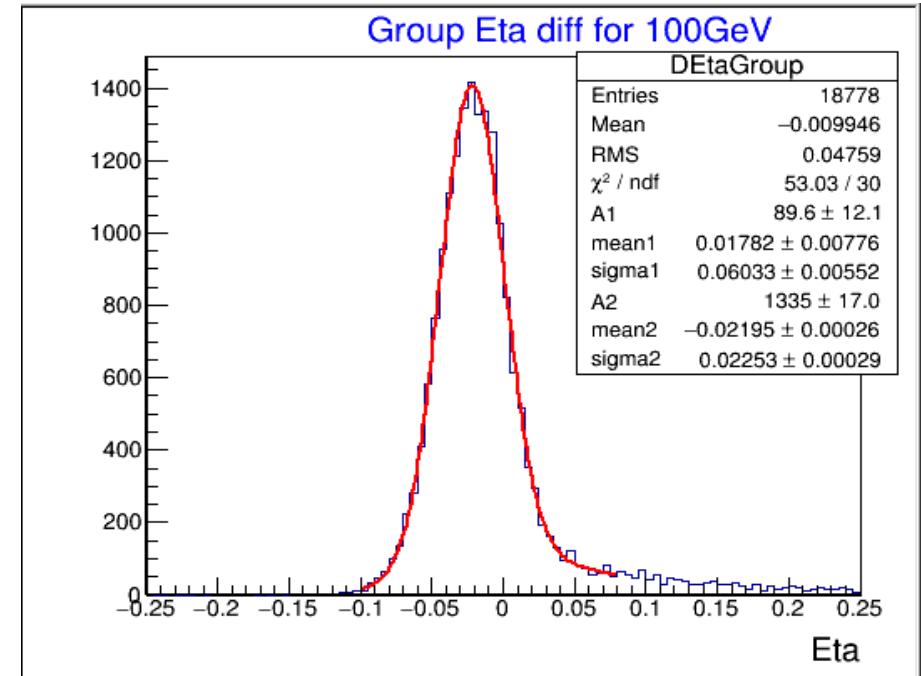
$$\sigma_\eta = 0.0277 \pm 0.0049$$

Pions – η group Position Resolution



$$a = (0.177 \pm 0.007) \sqrt{\text{GeV}}$$

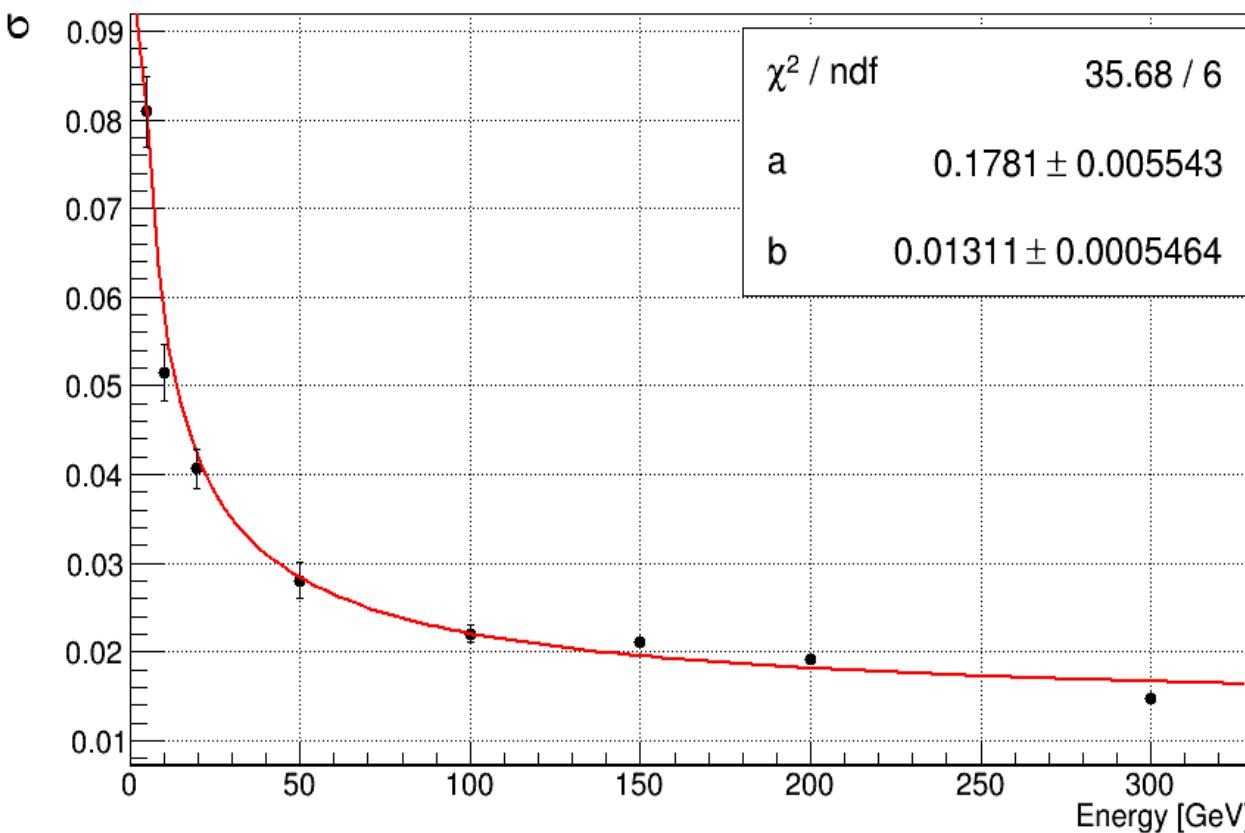
$$b = 0.025 \pm 0.0008$$



$$\sigma_\eta = 0.03448 \pm 0.0046$$

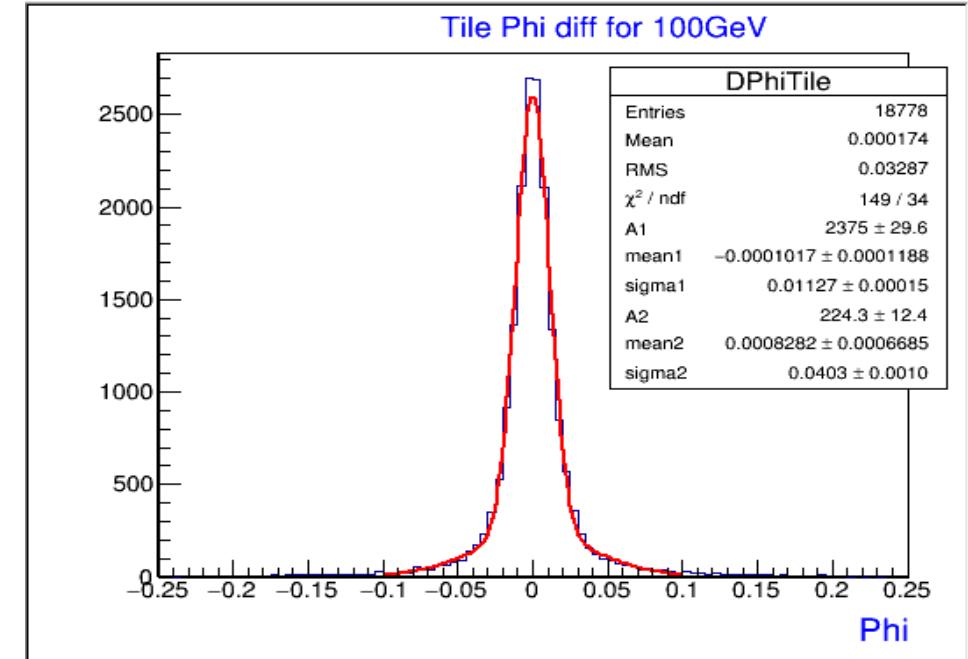
Pions – φ tile Position Resolution

Phi-Tile position resolution



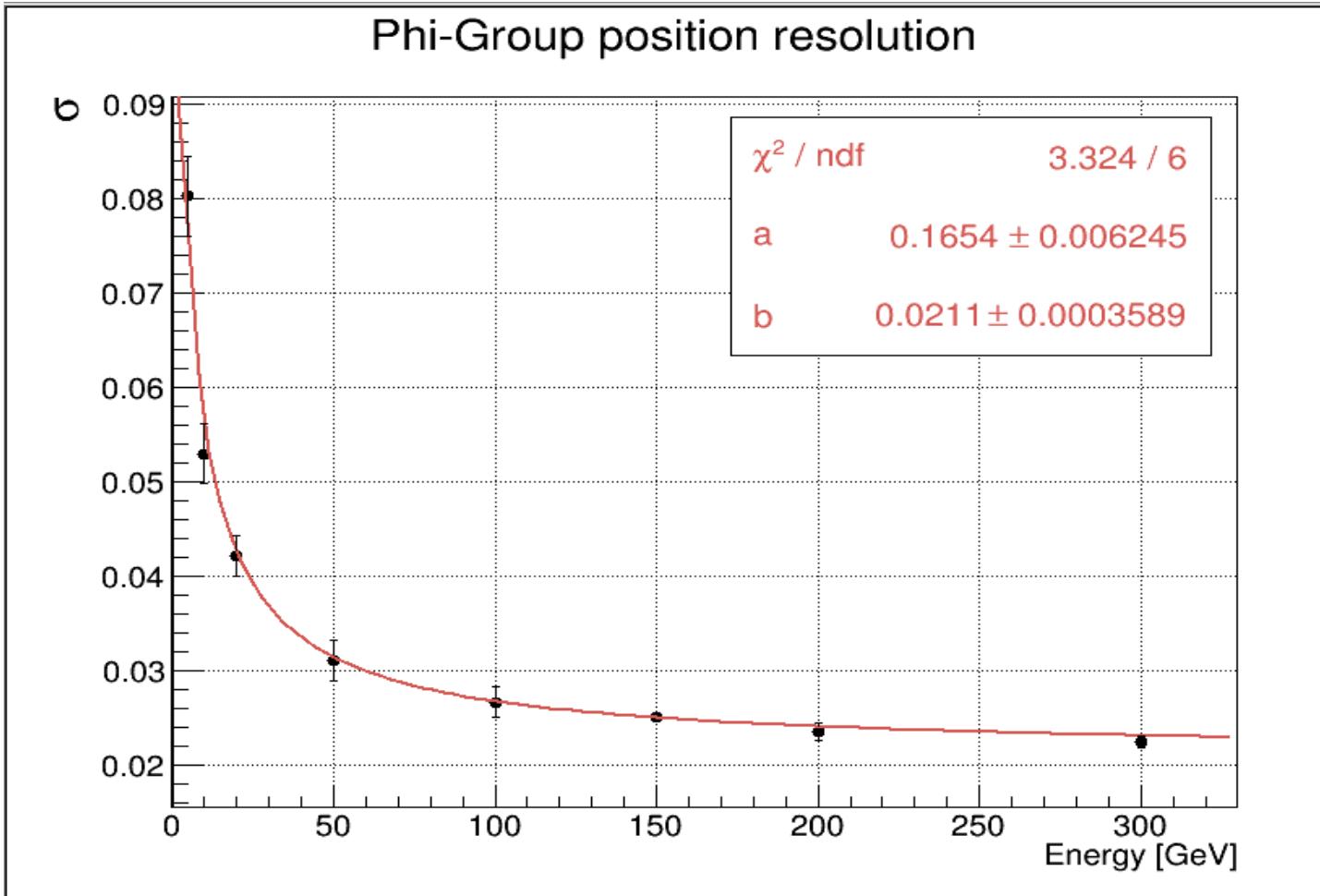
$$a = 178 \text{ mrad} \sqrt{\text{GeV}}$$

$$b = 13 \text{ mrad}$$



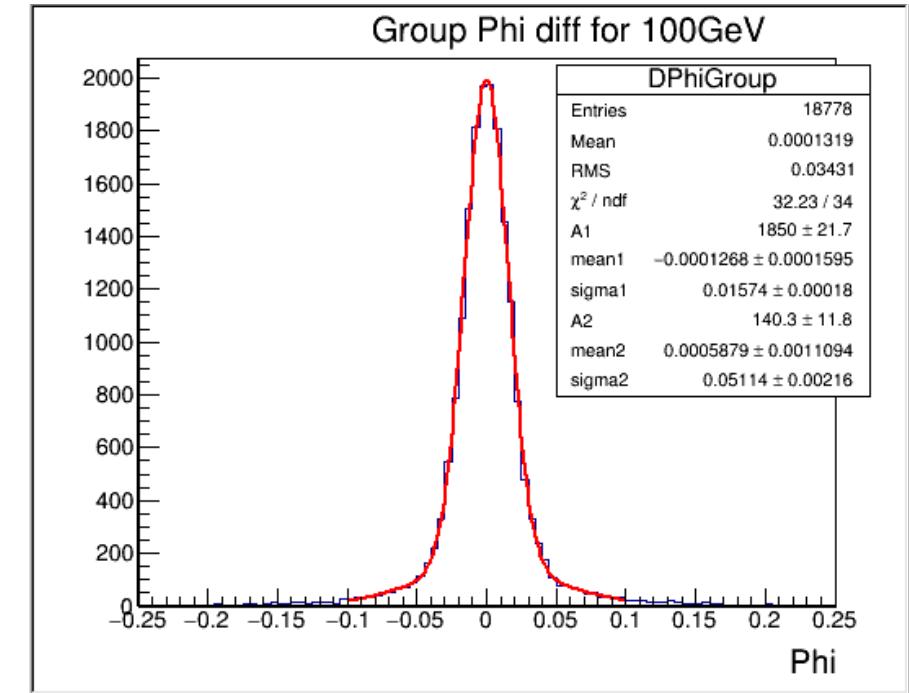
$$\sigma_\varphi = 22.06 \pm 1.1 \text{ mrad}$$

Pions – φ group Position Resolution



$$a = 165.4 \text{ mrad} \sqrt{\text{GeV}}$$

$$b = 21 \text{ mrad}$$



$$\sigma_\varphi = 26.75 \pm 1.8 \text{ mrad}$$