

# Charge and Velocity Studies with the CERN Test Beam October 2003

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# Outline

- ? Radiators analysed
- ? Data selection
- ? Velocity reconstruction
- ? Charge Reconstruction
- ? Npe analysis
- ? Conclusions

## Radiators studied

Manufacturer	Index	Size (l*l*h mm <sup>3</sup> )	Label	Run Nb	Comments
Novossibirsk	1.03	100 X 100 X 31	CIN1.03G	538	Tested 2003
Novossibirsk	1.05	55 X 55 X 55	CIN1.05	607	Tested 2003

## Reconstructions:

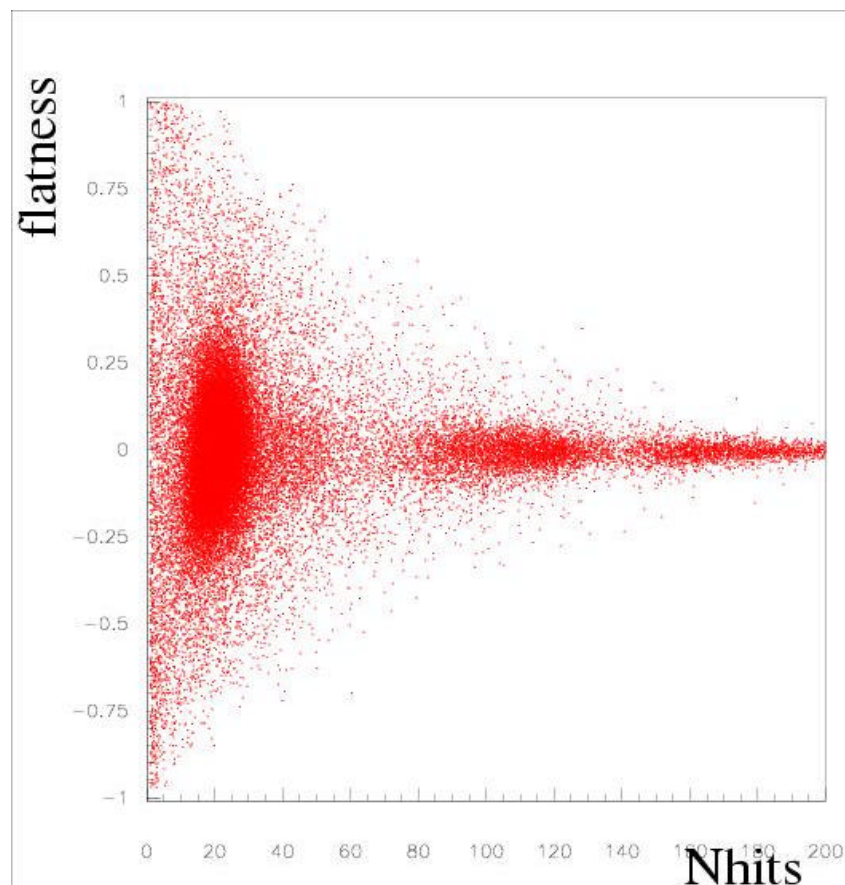
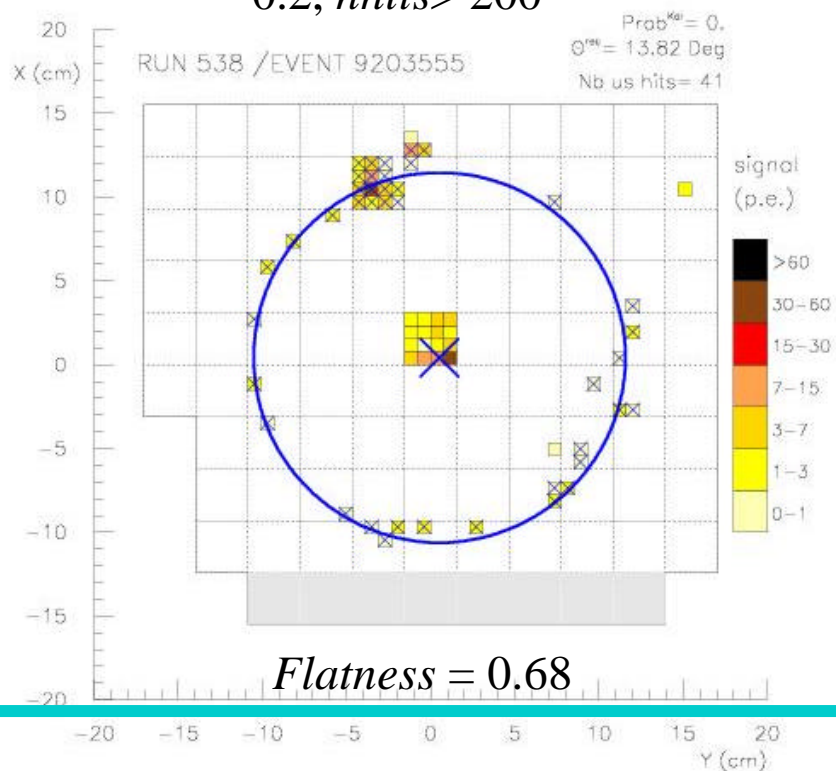
Velocity and Charge reconstructions are done during the production and stored in 2 different blocks in the ntuple BETA2 and CHARGE2

# Data Selection

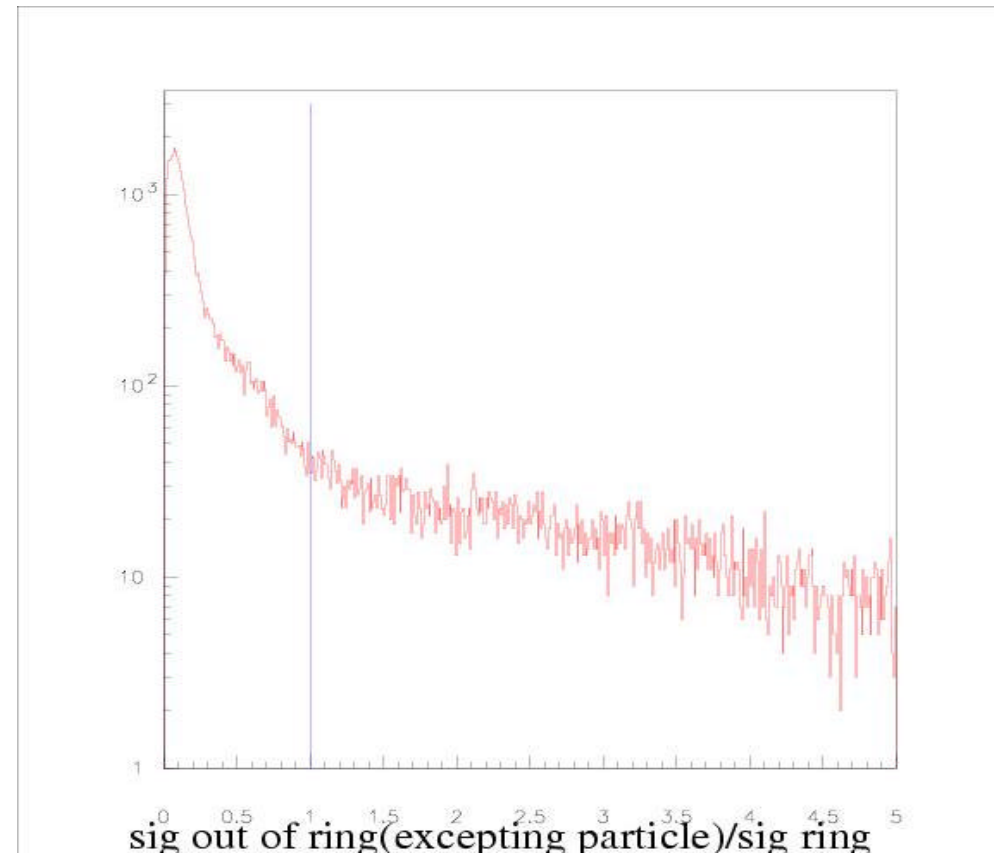
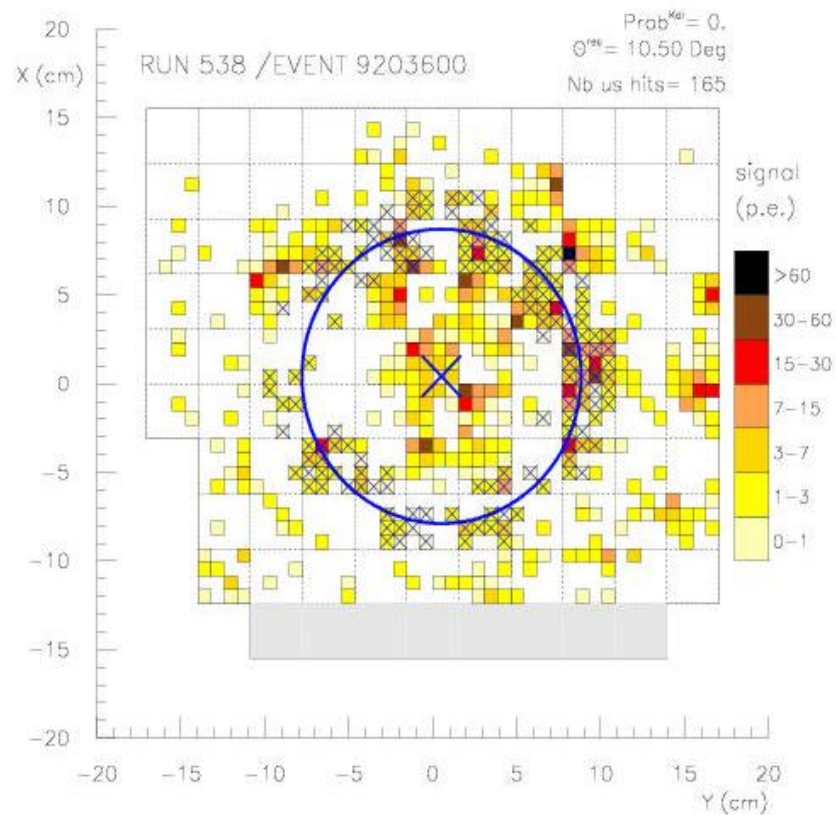
? *Cerenkov ring flatness* – requirement of the hits azimuthal uniformity for particles with an incident angle

$$\sum w_i \cos \phi_i / \sum w_i; w_i = \text{signal}$$

Flatness < 0.7, nhits < 20  
 Flatness < 0.4, 20 < nhits < 120  
 Flatness < 0.2, nhits > 200

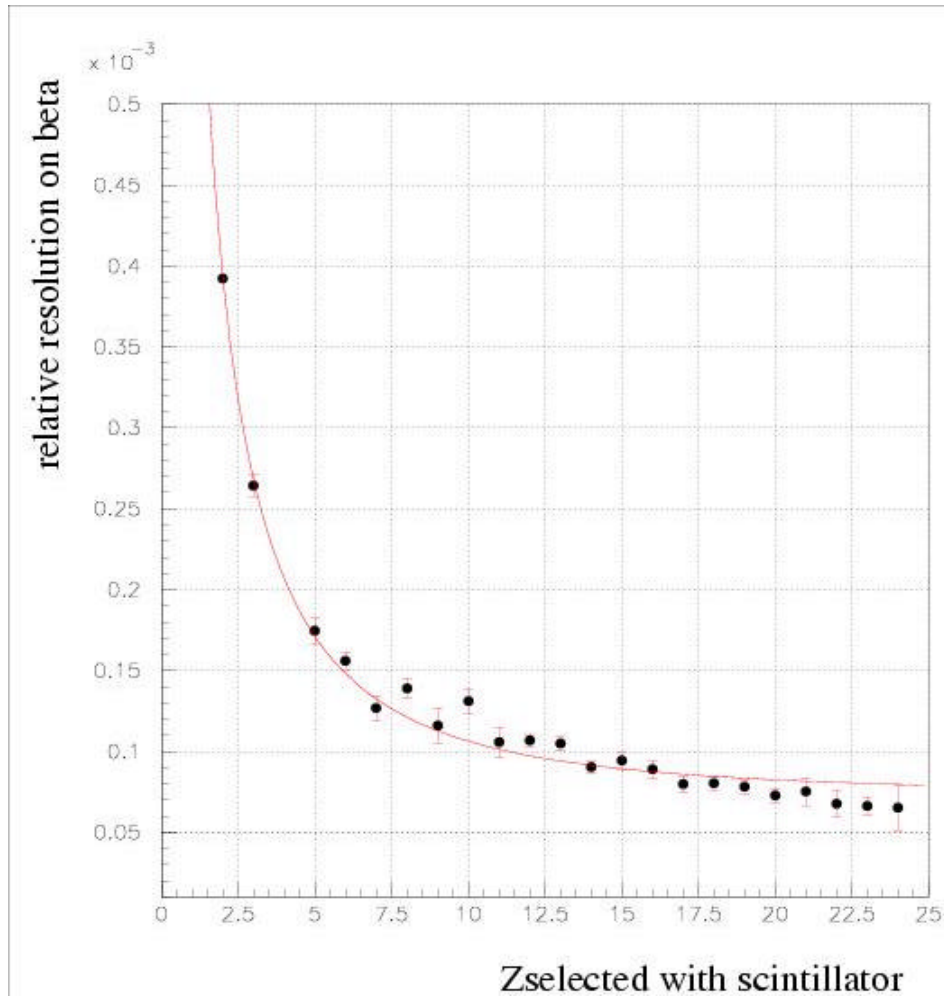


? **Event Signal** – requirement of a small noisy/ring signal ration



Signal ratio  $\sim 1.8$

## Velocity reconstruction CIN1.03 (run 538)

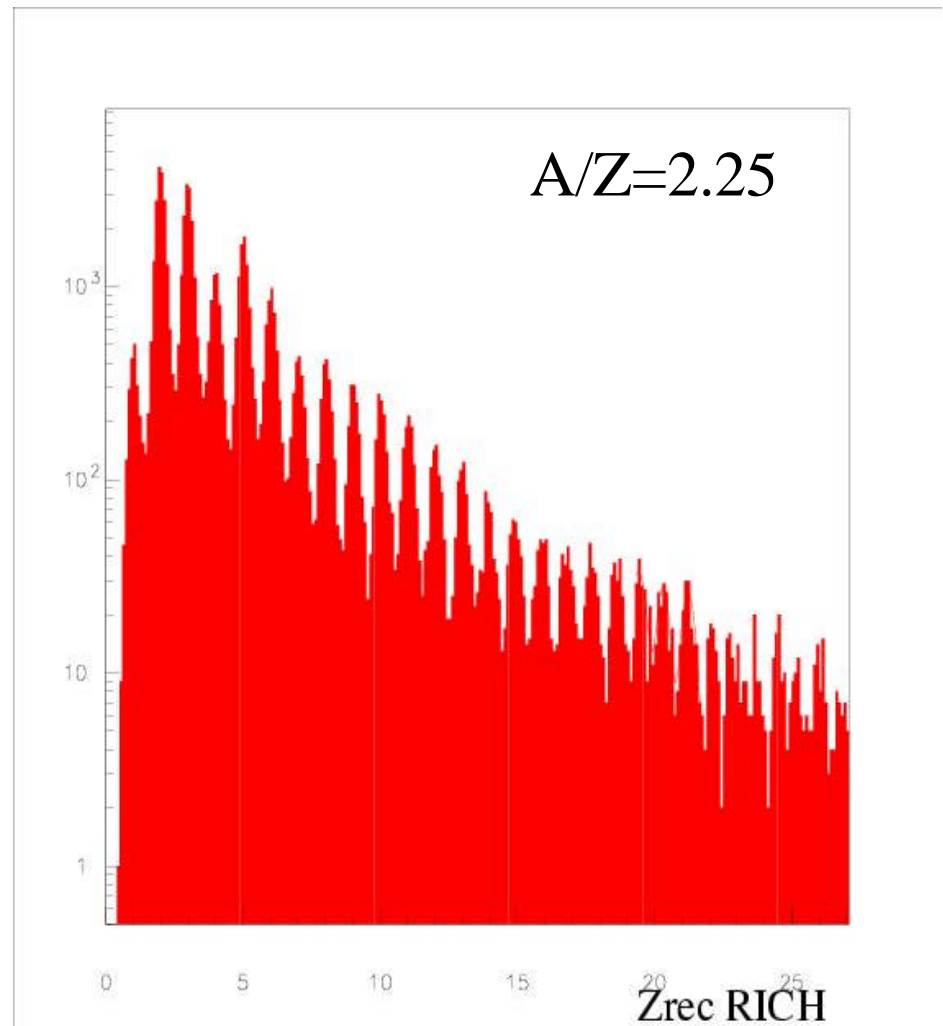
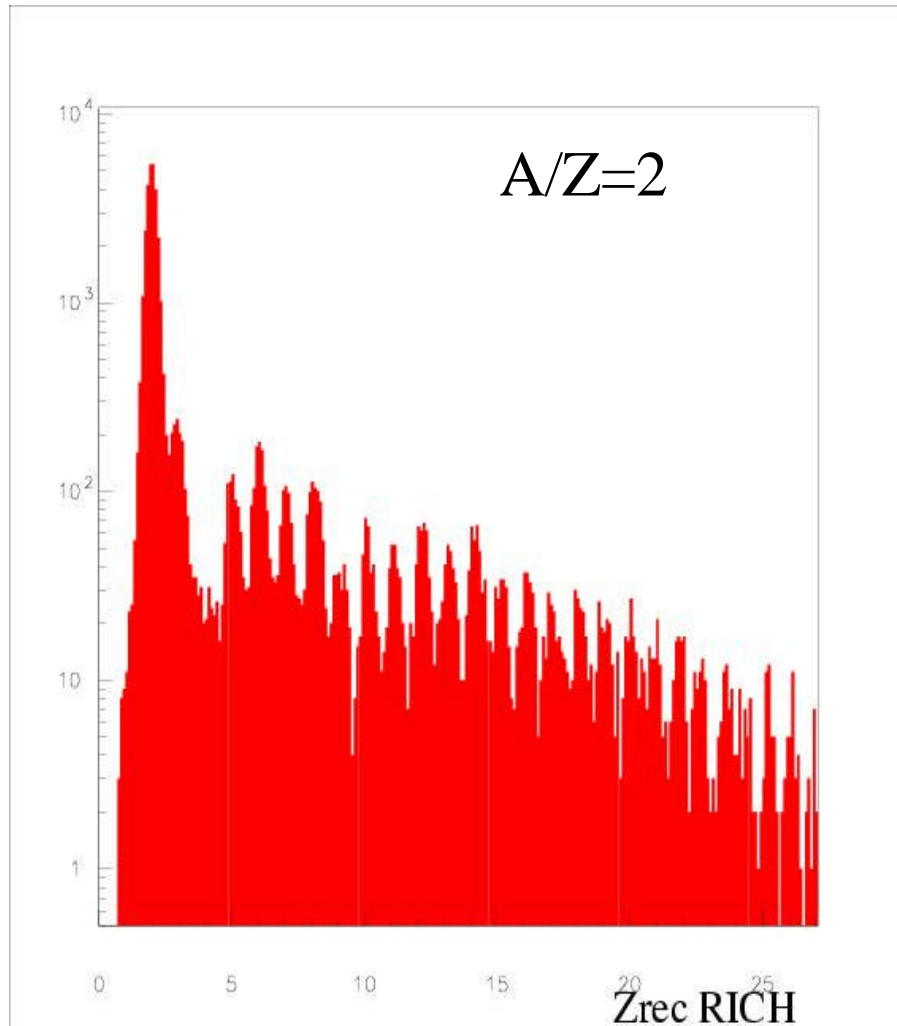


$$\sqrt{ax^2 + b^2}$$

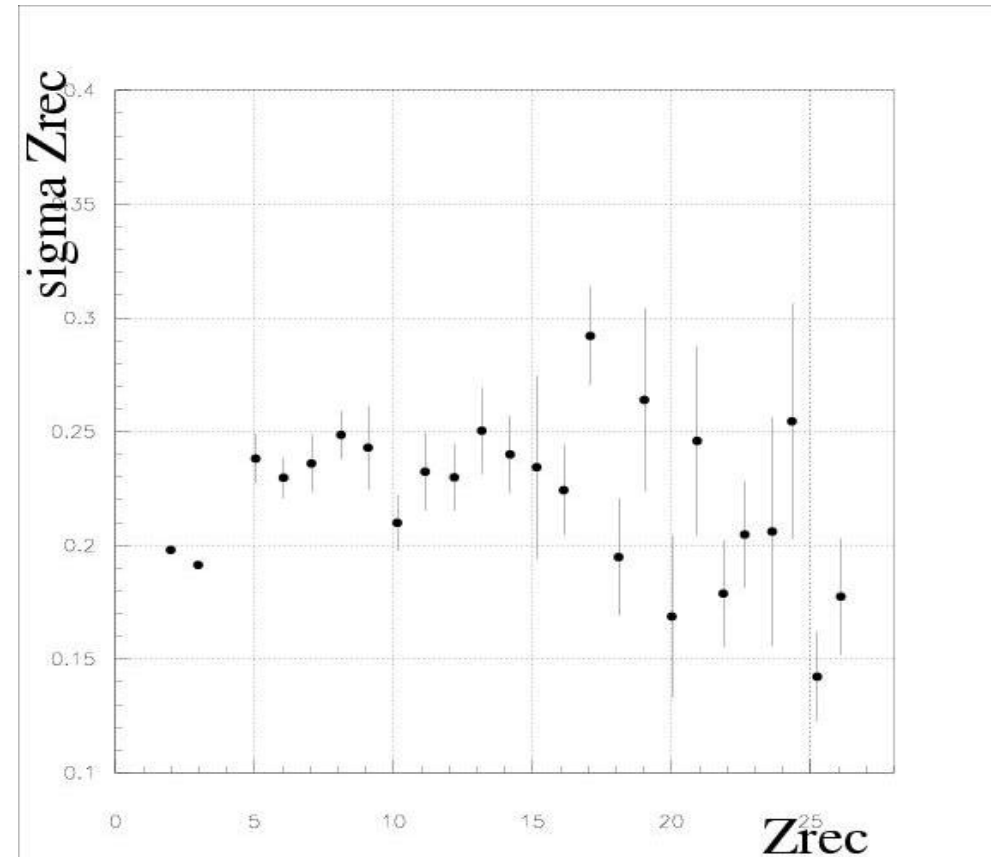
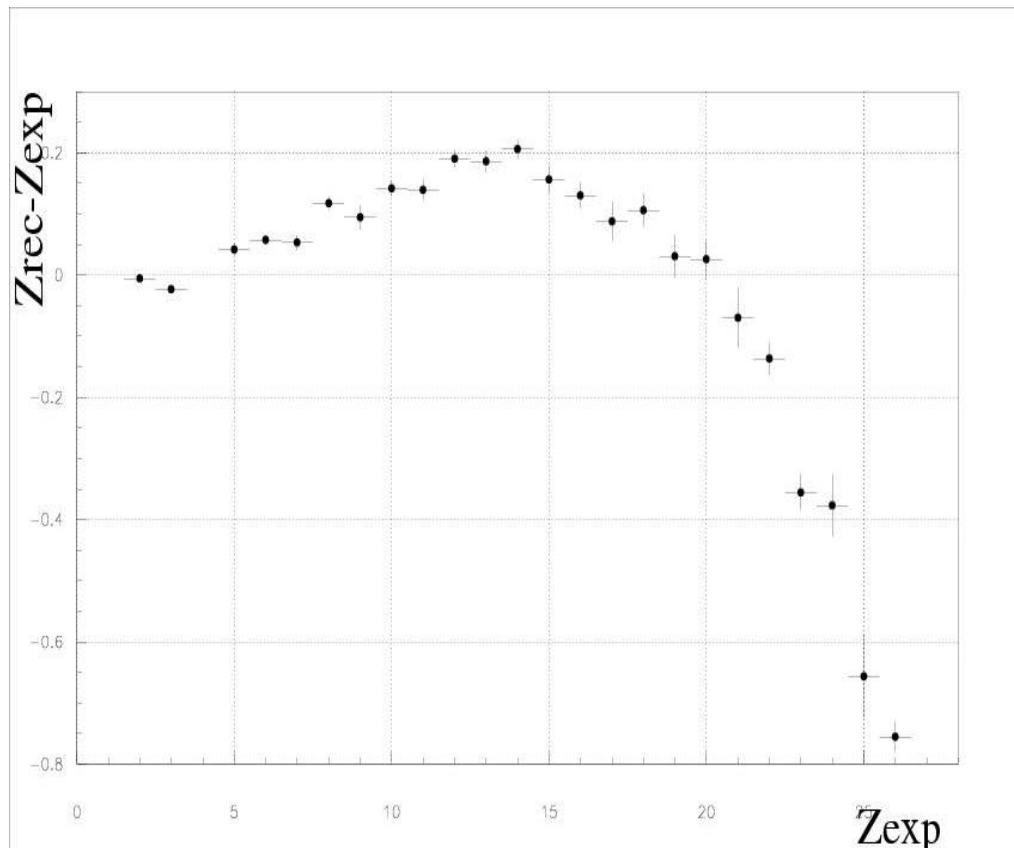
$$a=7.74E-4 \quad +/- \quad 5.08E-6$$

$$b=7.28E-5 \quad +/- \quad 1.65E-6$$

# Charge reconstruction CIN1.03 (run 538) and CIN1.05 (run 607)

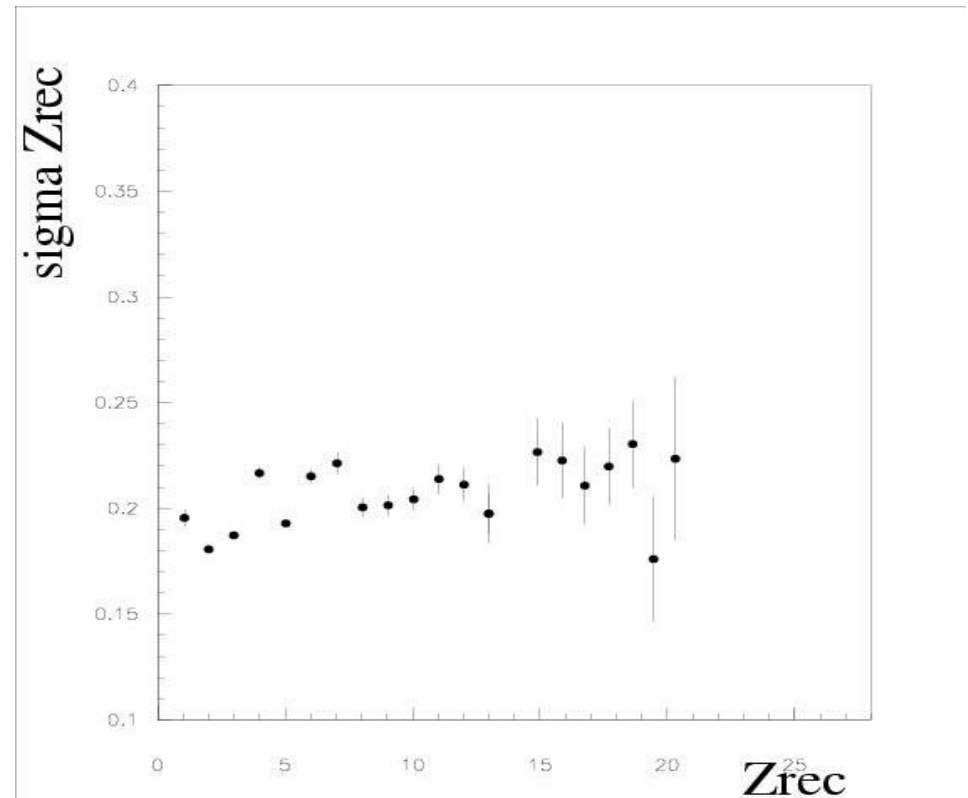
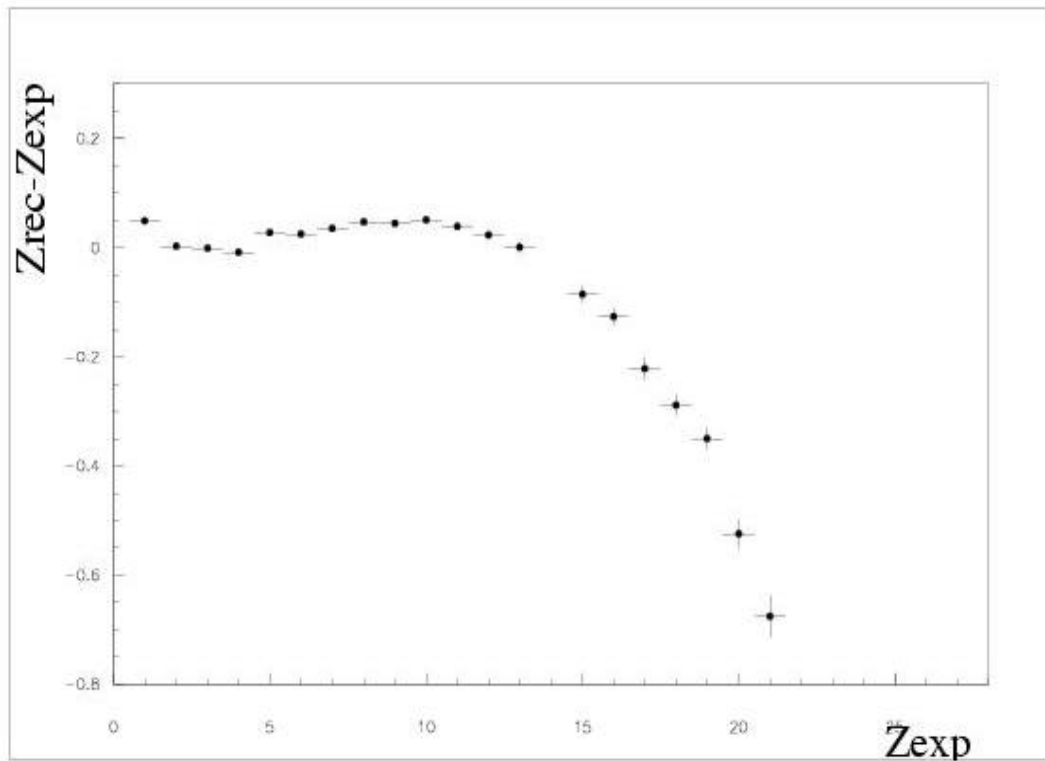


# Charge error and deviation CIN1.03 (run 538)

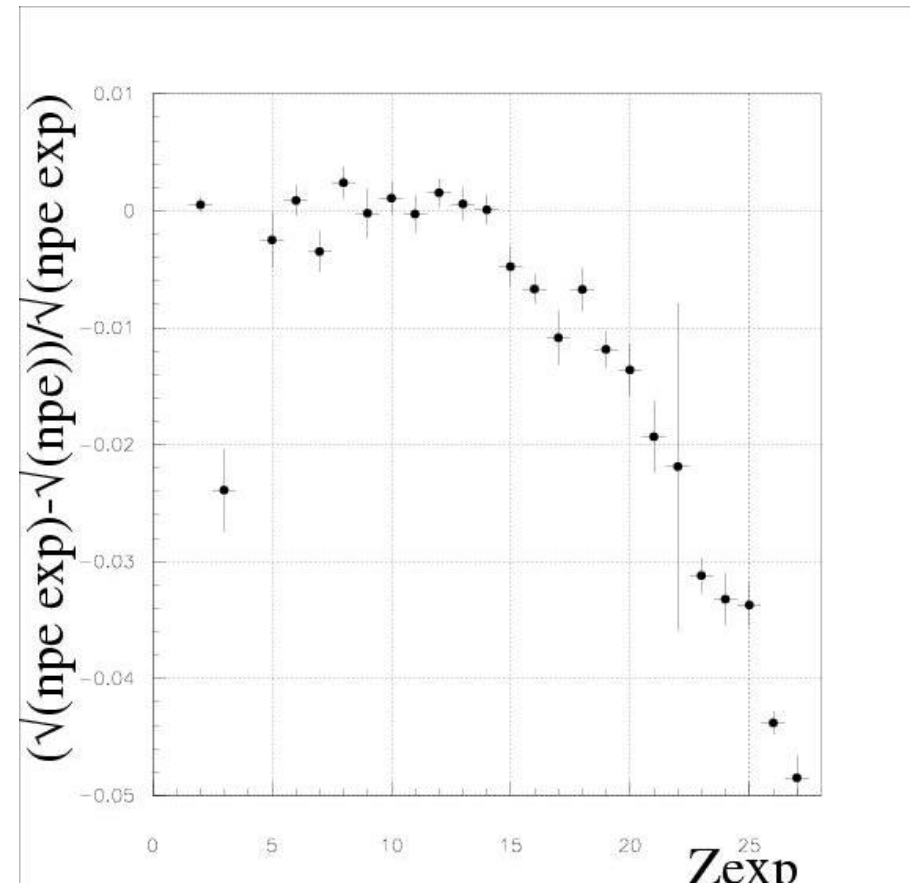
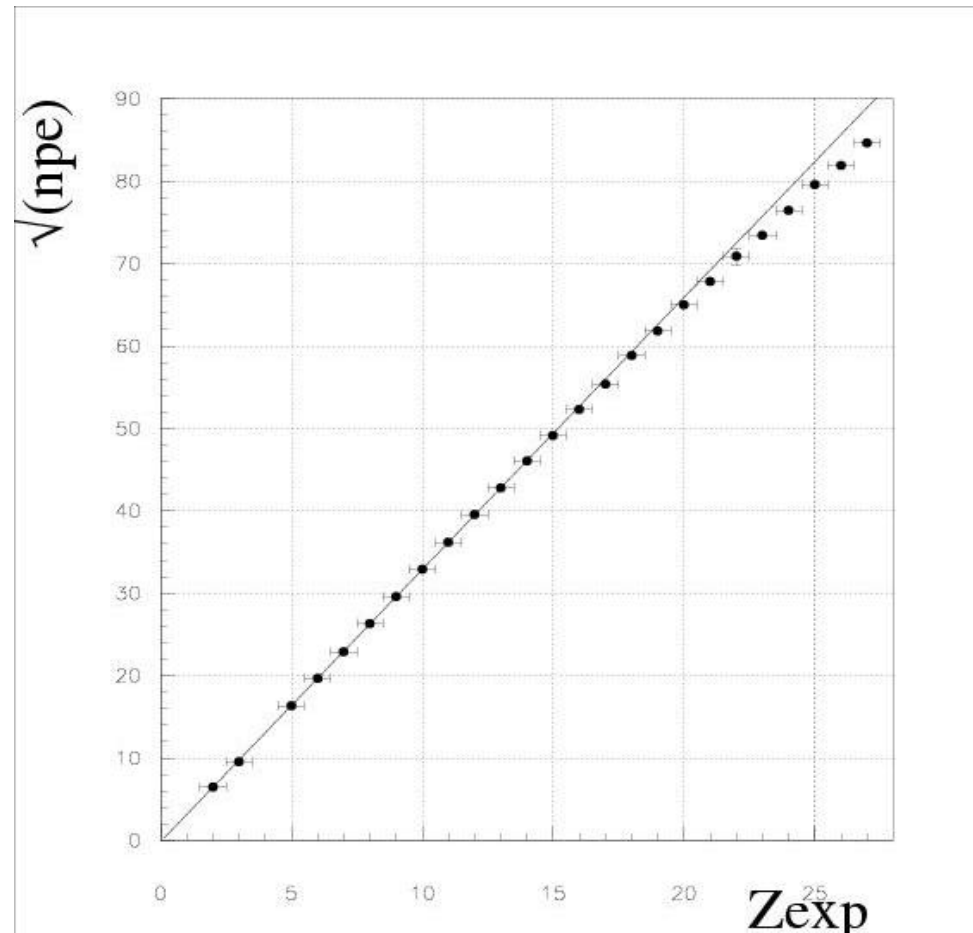




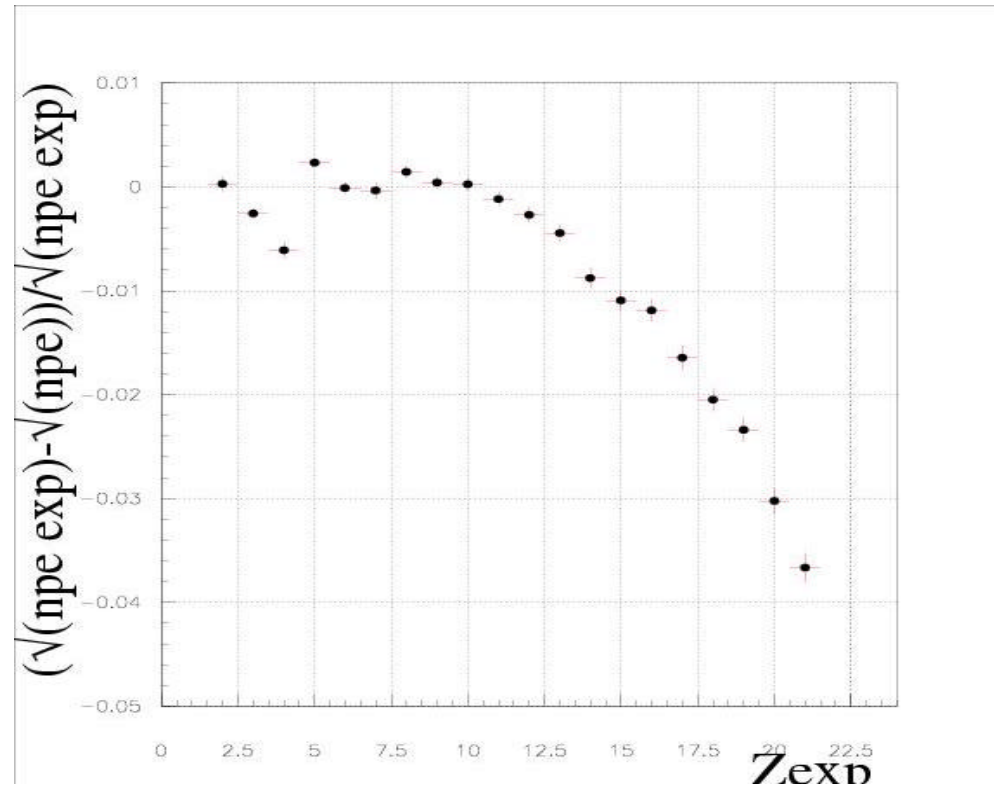
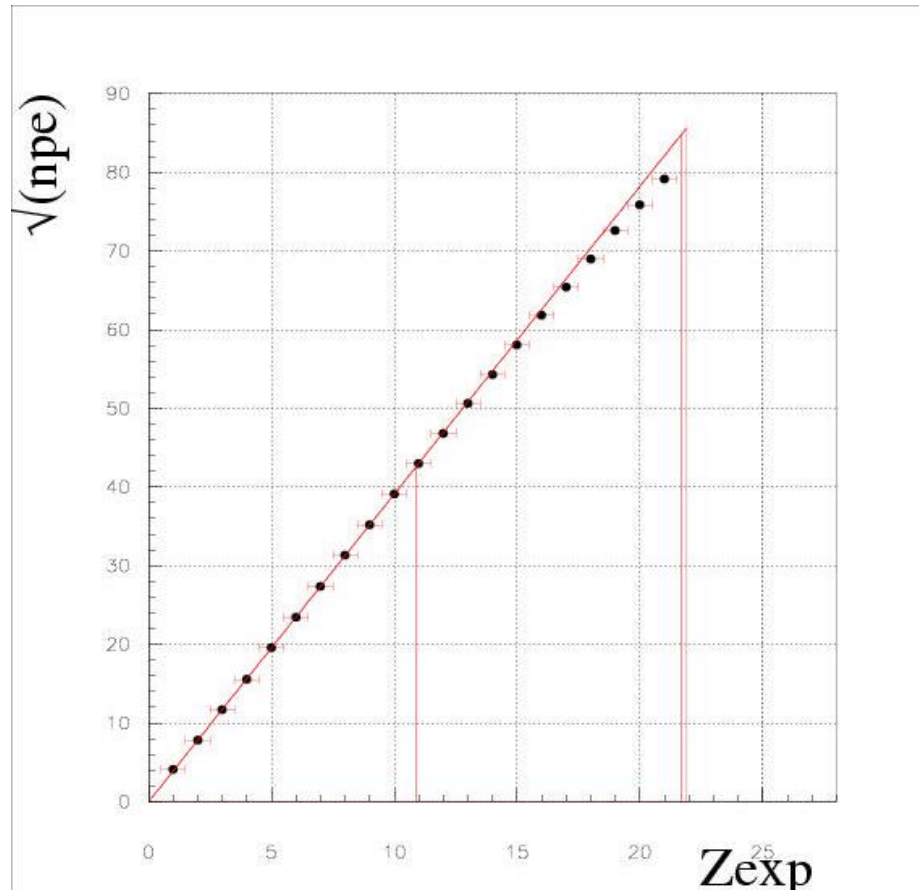
# Charge error and deviation CIN1.05 (run 607)



# *Nb Photoelectrons analysis CIN1.03 (run 538)*



# *Nb Photoelectrons analysis CIN1.05 (run 607)*



## *Conclusions:*

- ? Charge and velocity reconstruction performed for two CIN radiators (1.03/1.05)
- ? Saturation observed for  $Z > \sim 15$