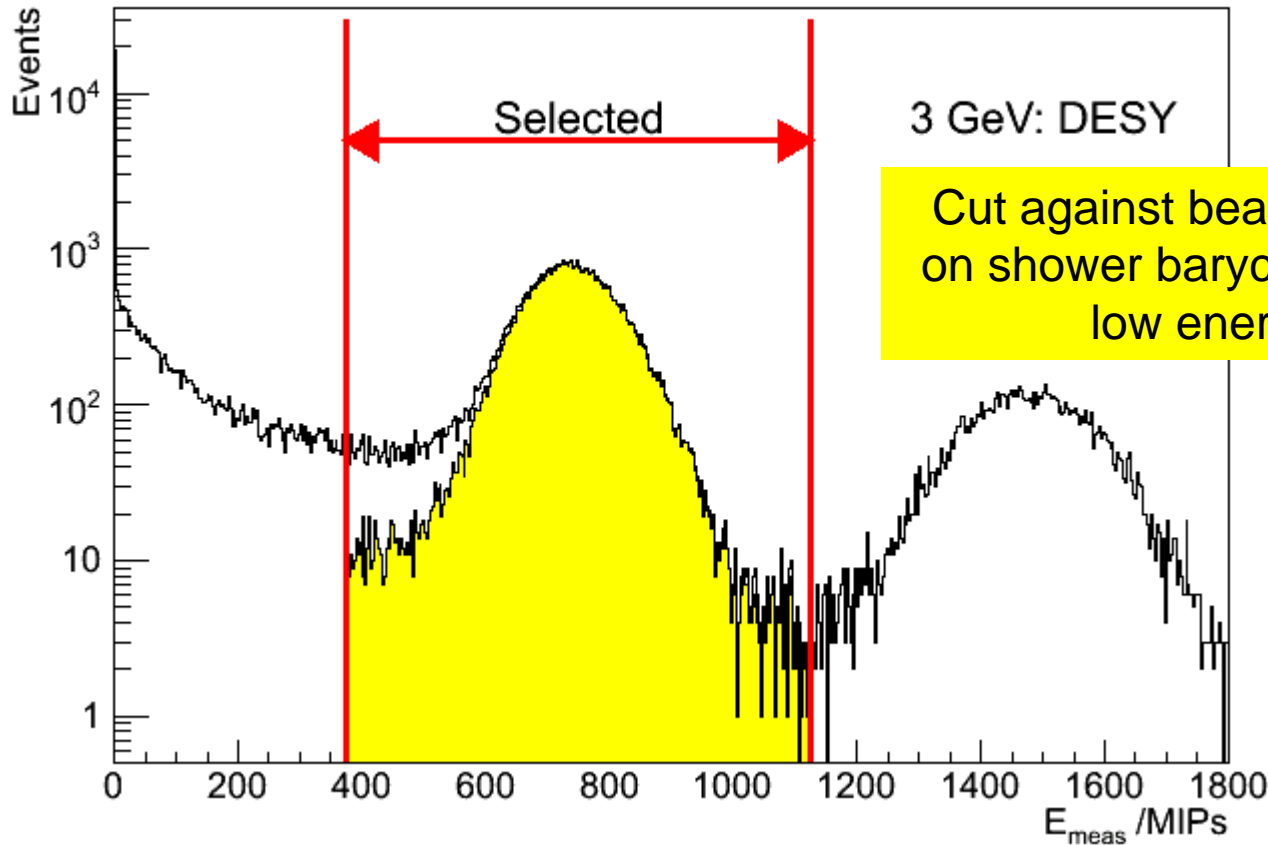


# Response, resolution, linearity

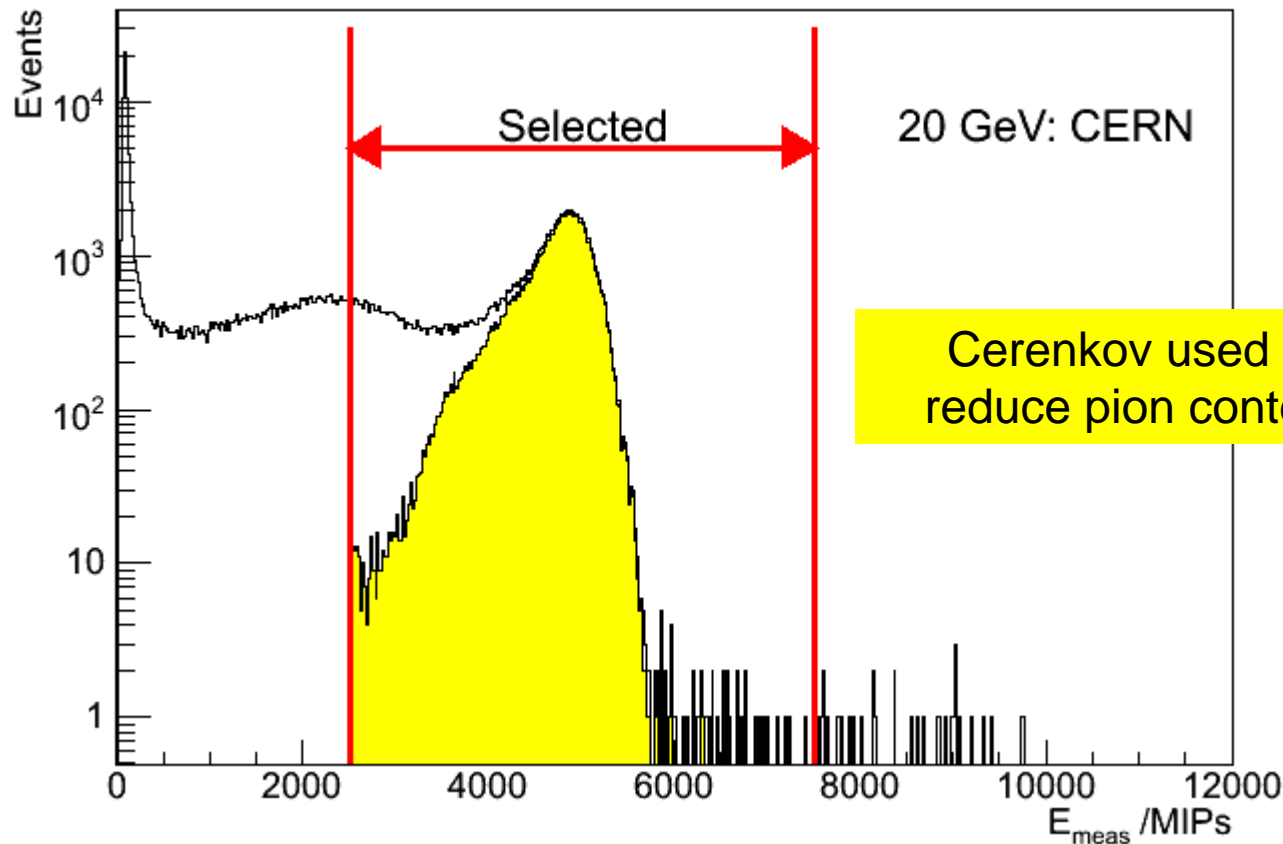
David Ward

- ❖ Run through plots intended for the LCWS ECAL note

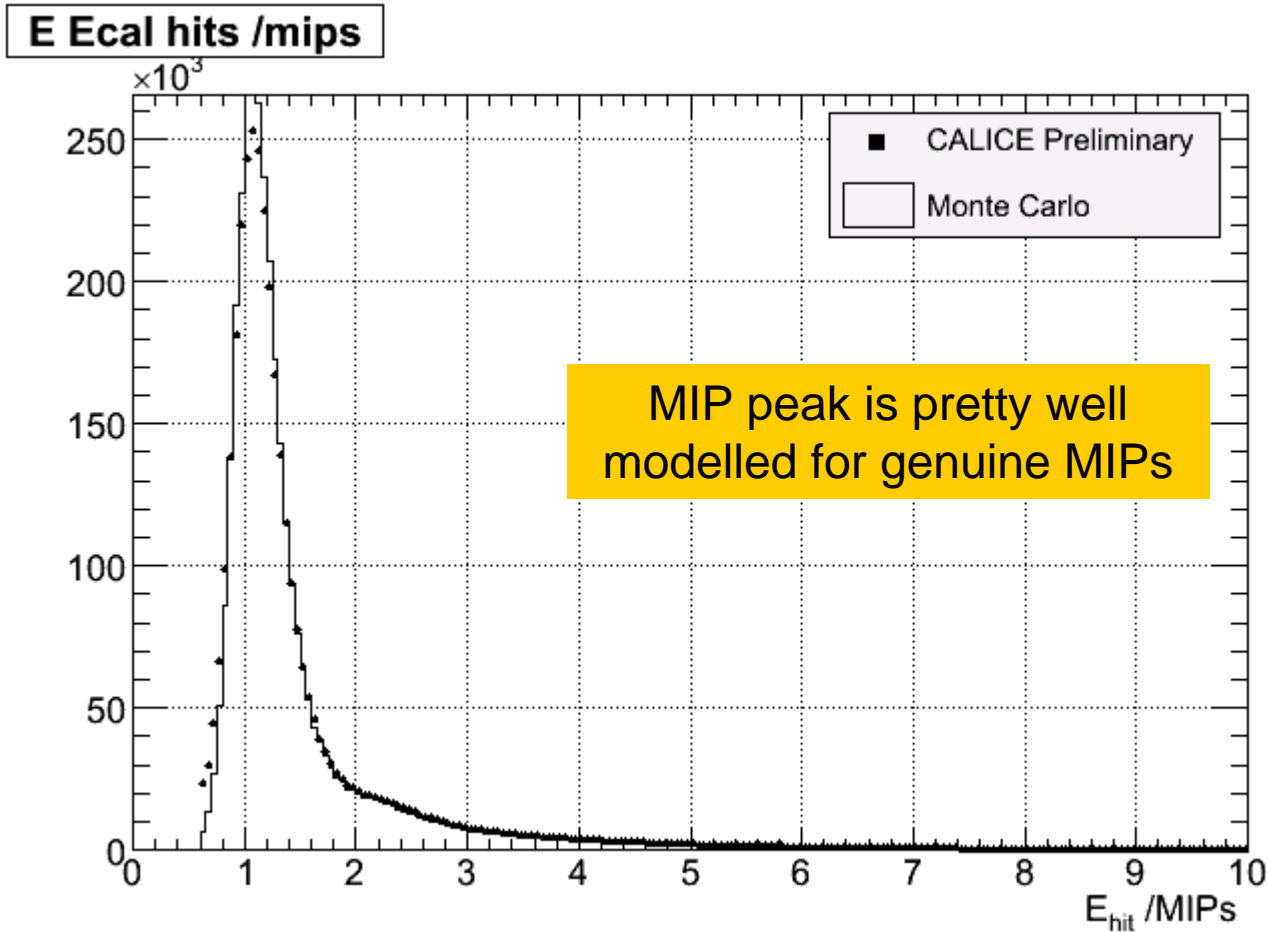
# Event selection @ 3 GeV



# Event selection @ 20 GeV

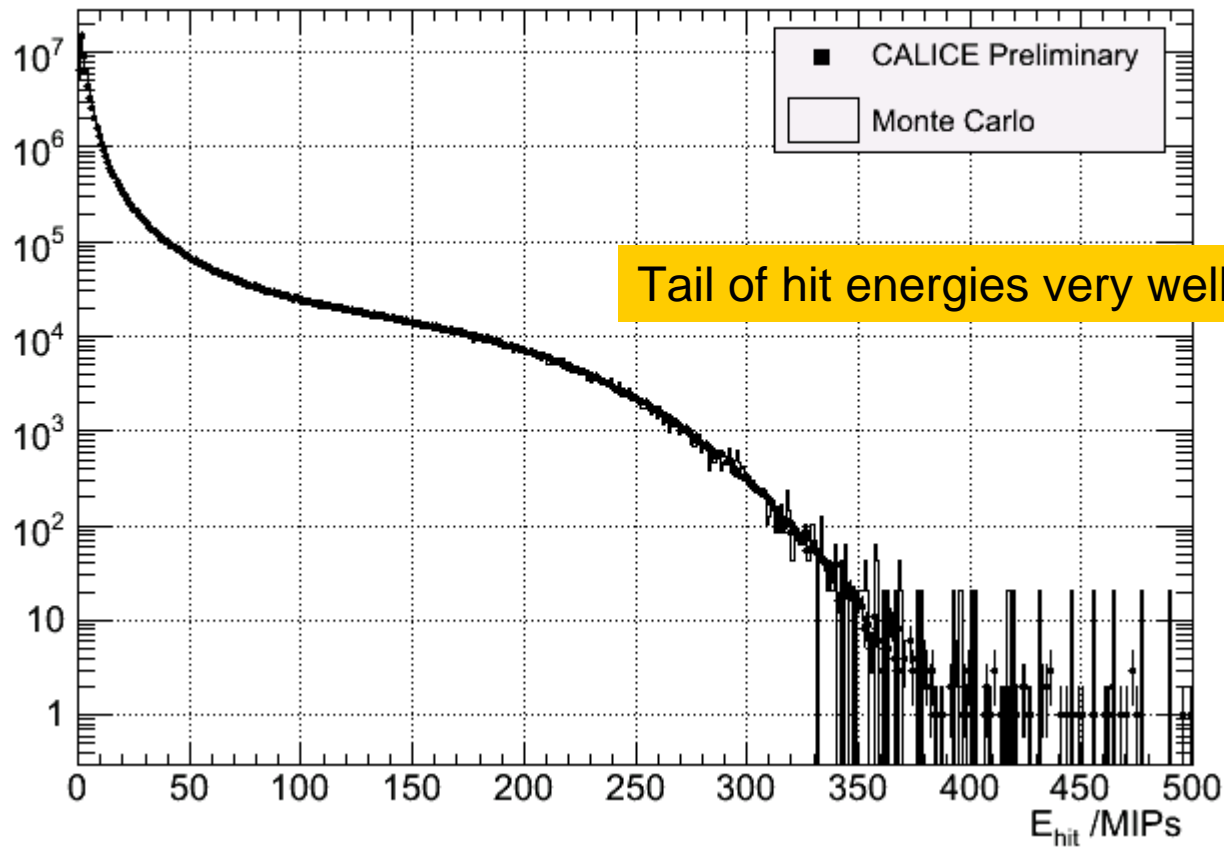


# Hit energies – non-showering $\pi^-$

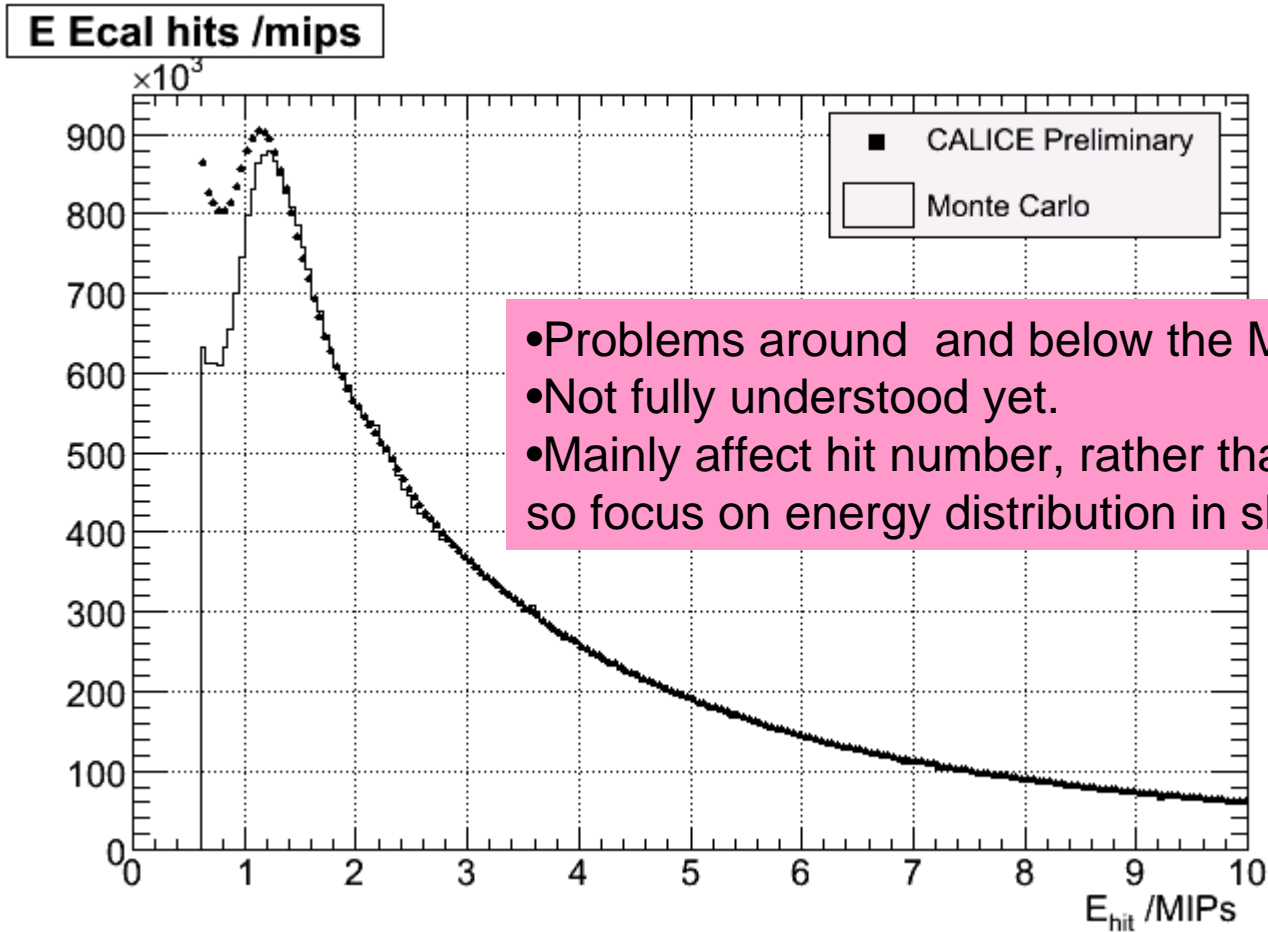


# Hit energies – 30 GeV $e^-$

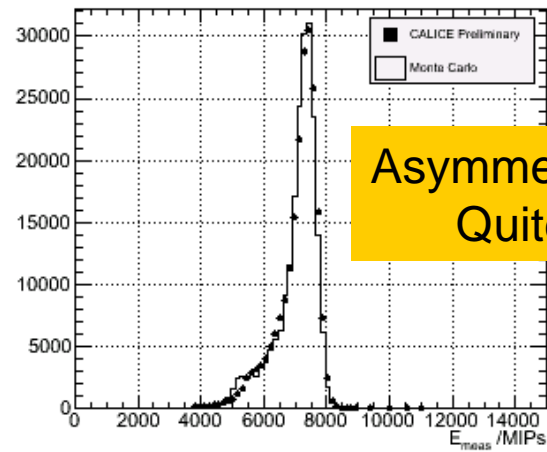
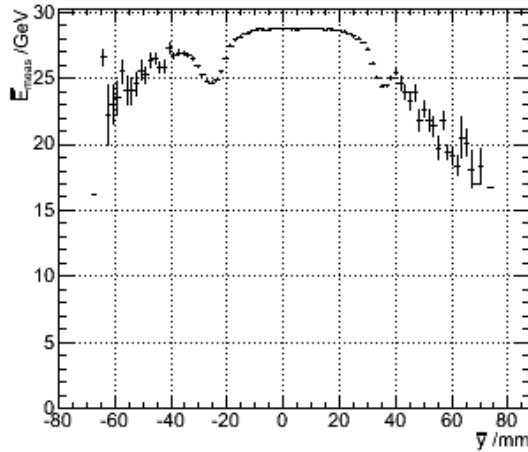
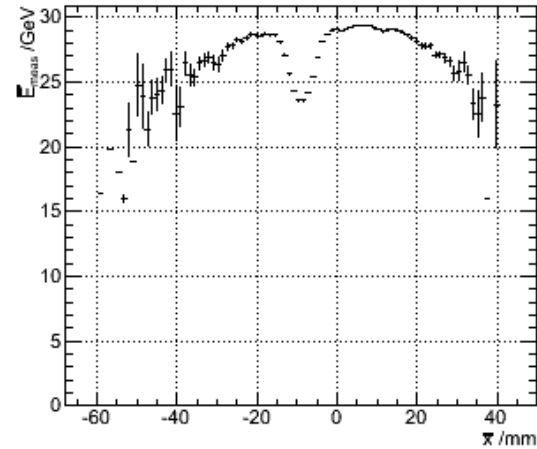
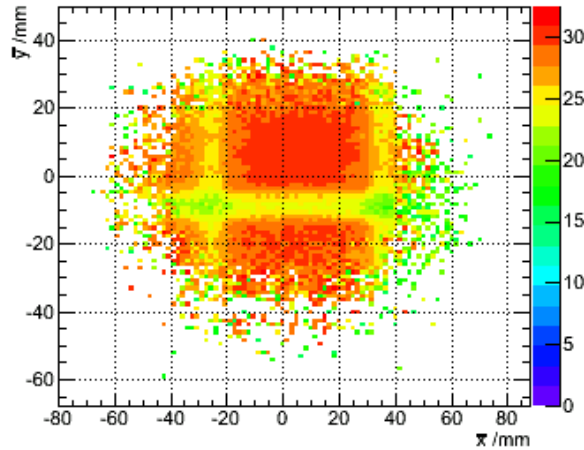
E Ecal hits /mips



# The same – linear scale



# Effect of inter-wafer gaps (30 GeV e<sup>-</sup>)

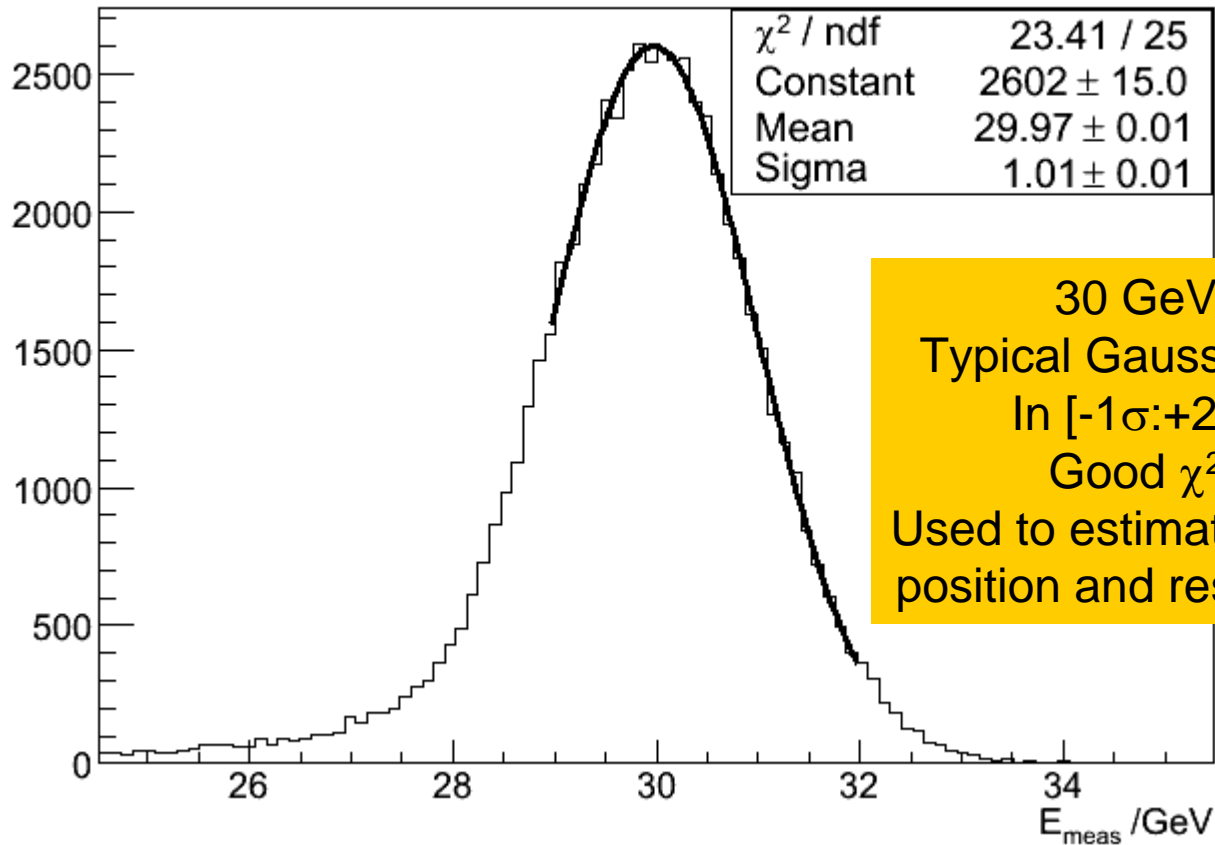


Asymmetry caused by gaps.  
Quite well modelled.

# Fit to determine response+resolution

$$E_{\text{meas}} = (\alpha_1 E(1-10) + \alpha_2 E(11-20) + \alpha_3 E(21-30)) / \beta$$

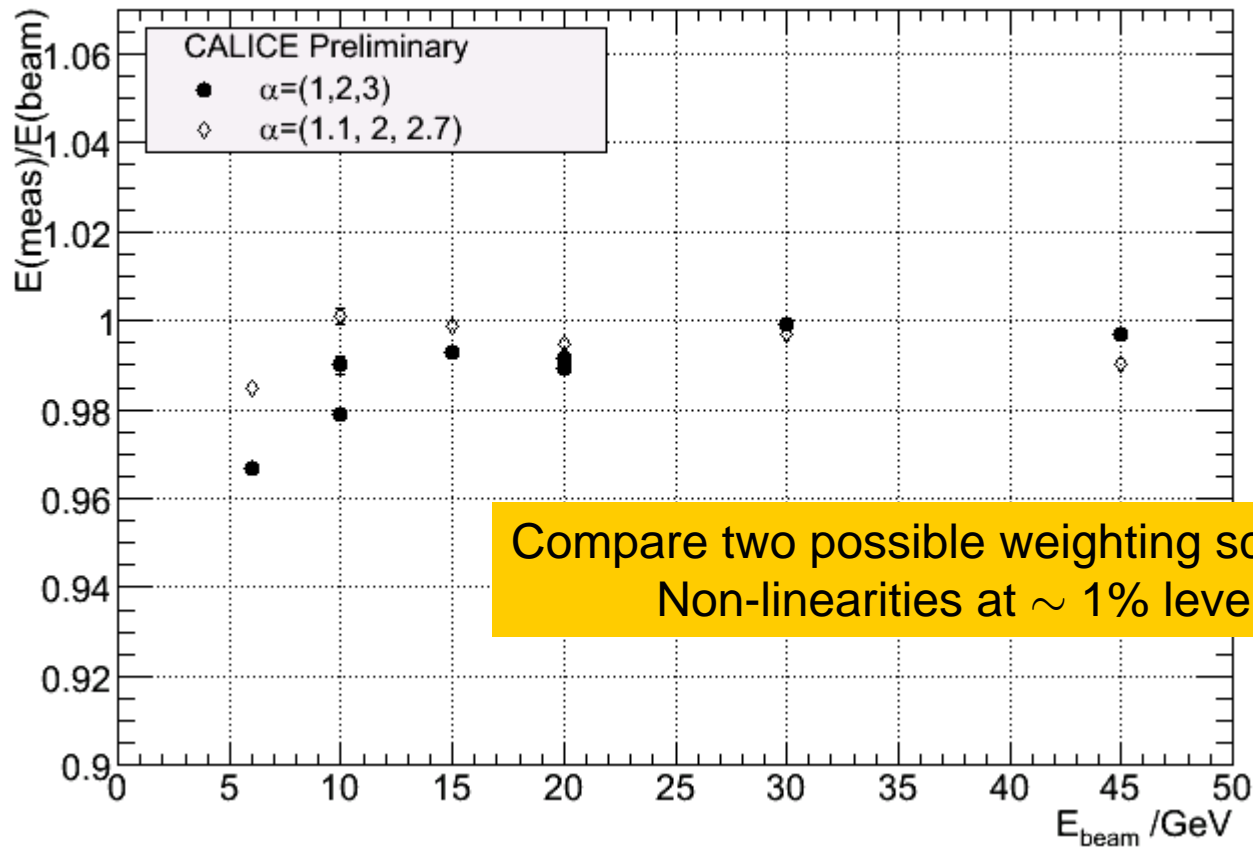
$(\alpha_1, \alpha_2, \alpha_3) = (1, 2, 3) ; \beta = 250.$



30 GeV  
Typical Gaussian fit  
In  $[-1\sigma : +2\sigma]$   
Good  $\chi^2$   
Used to estimate peak  
position and resolution

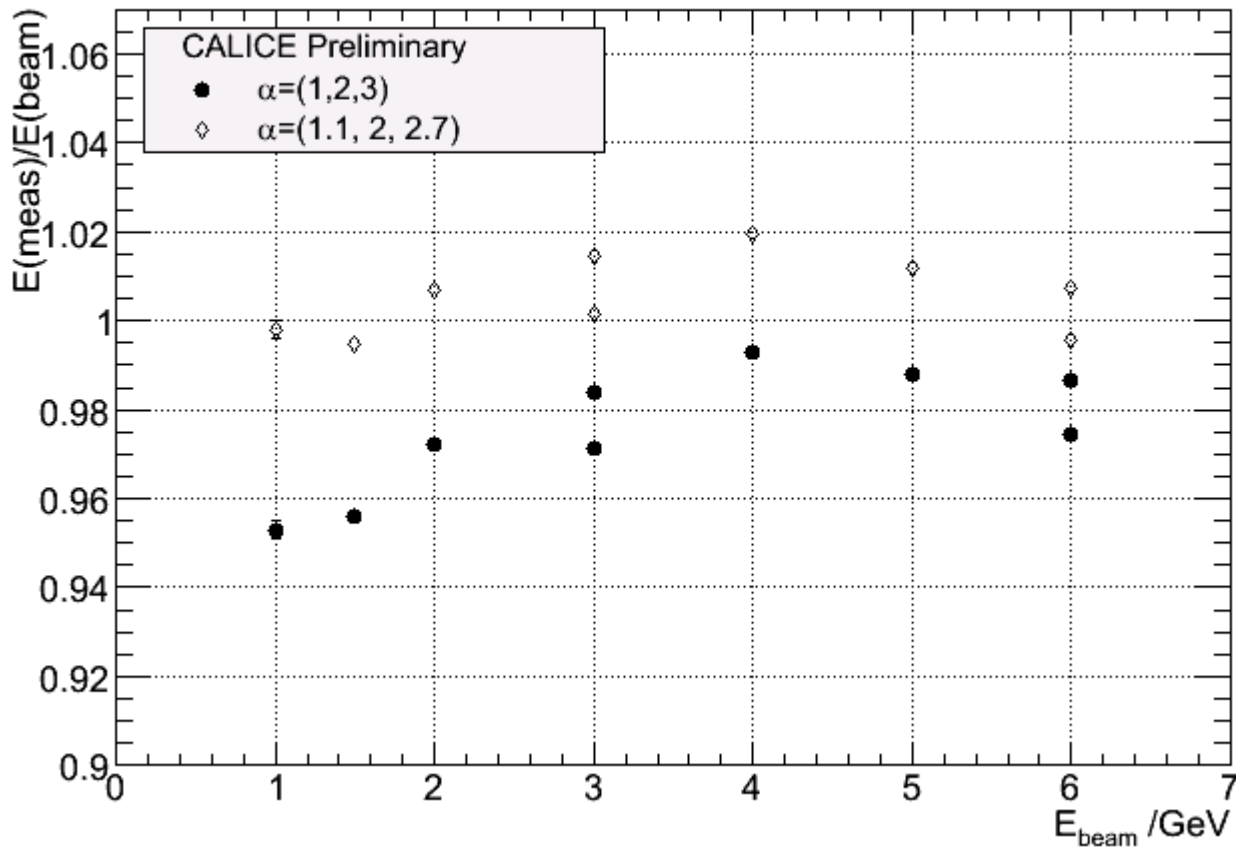


# Linearity (CERN data)

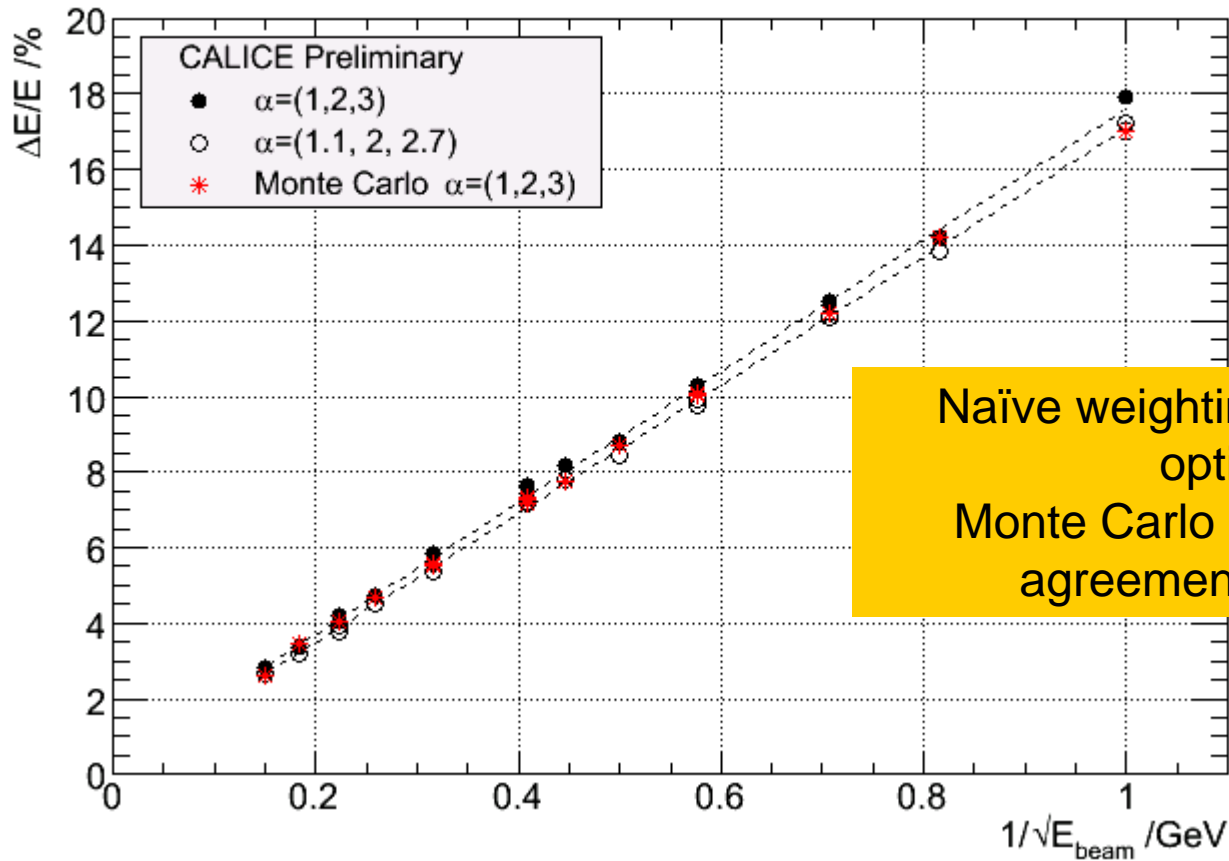


# Linearity DESY data

## Linearity

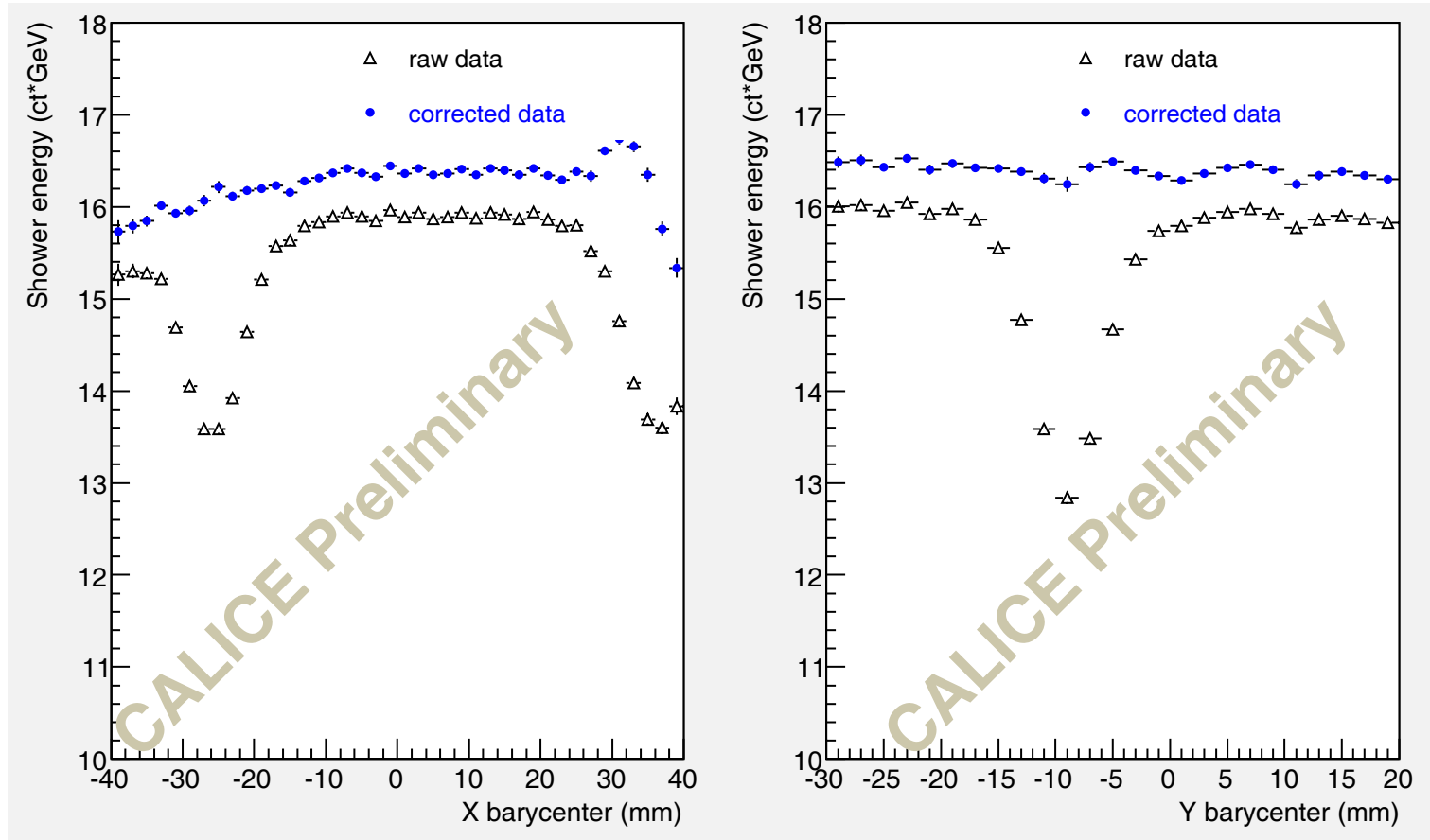


# Resolution (CERN+DESY)

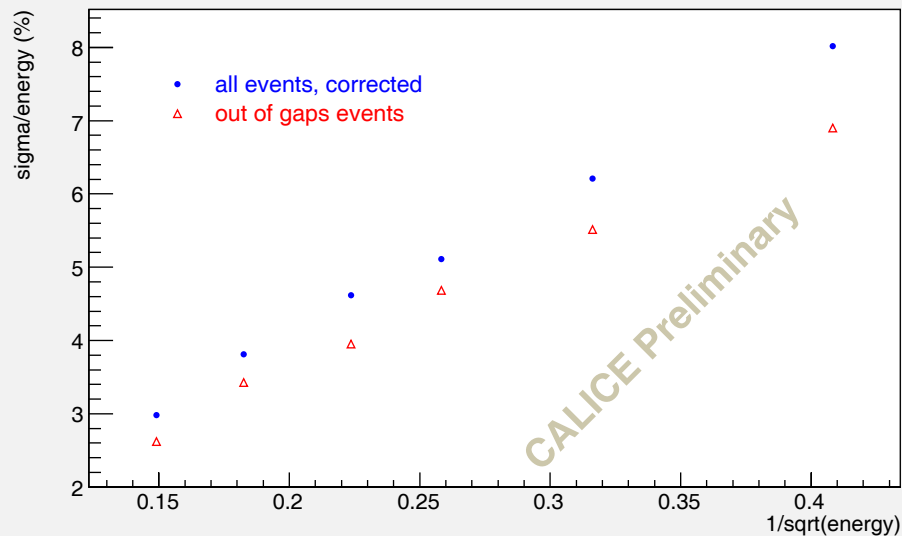
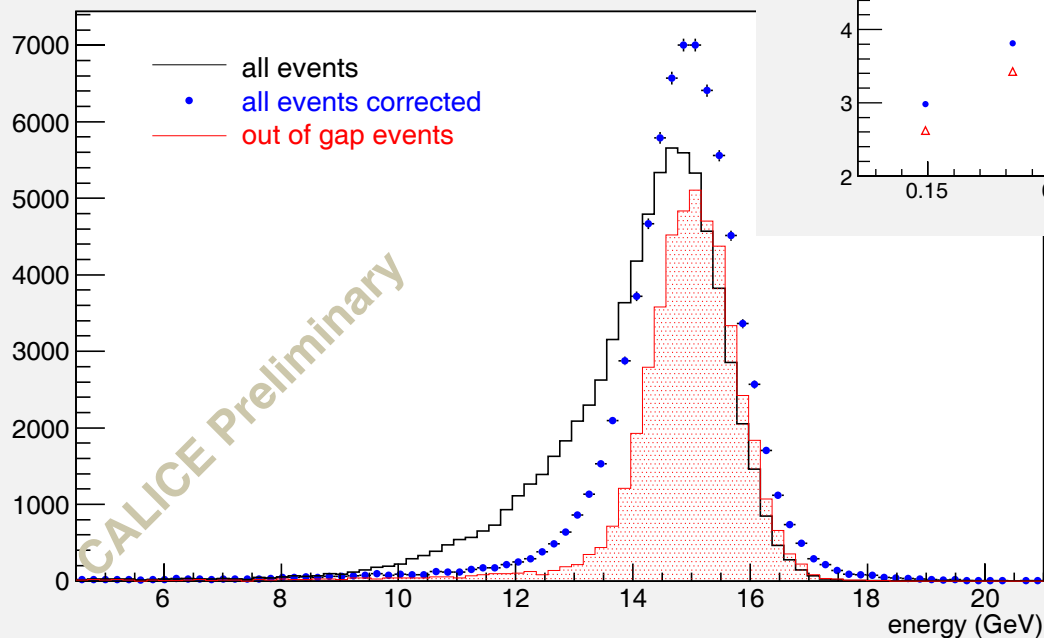


# Gap correction (global)

Plots from Cristina Carloganu; Clermont group



# Effect of gap correction



# Transverse profile

From G.Mavromanolakis

