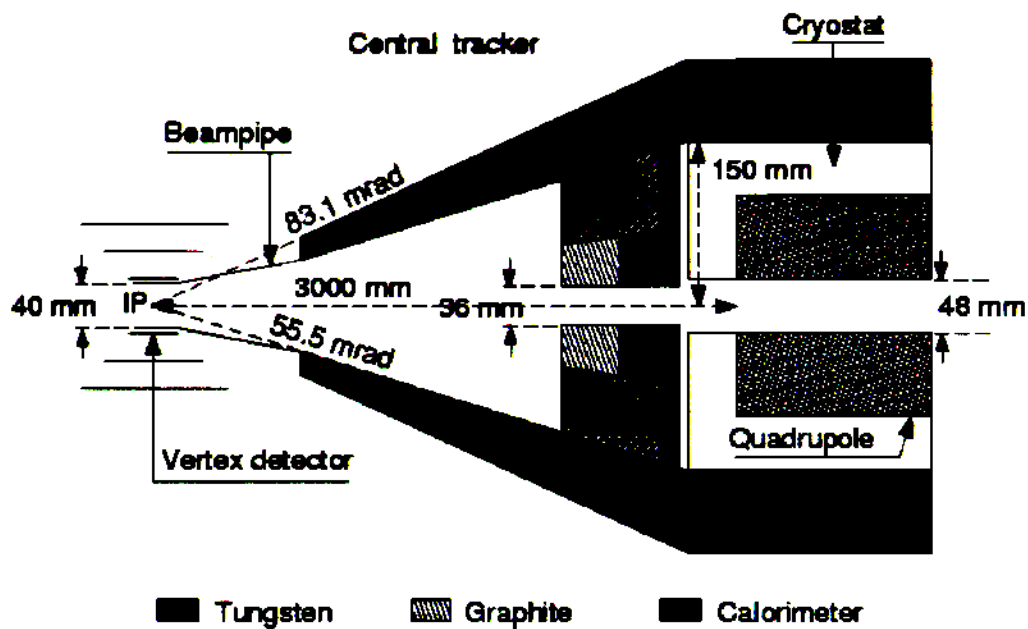


# Looking forward (getting down to business)



**ECFA-DESY Meeting**  
**Marcello Piccolo**  
**Oxford, March 20-23 1999**

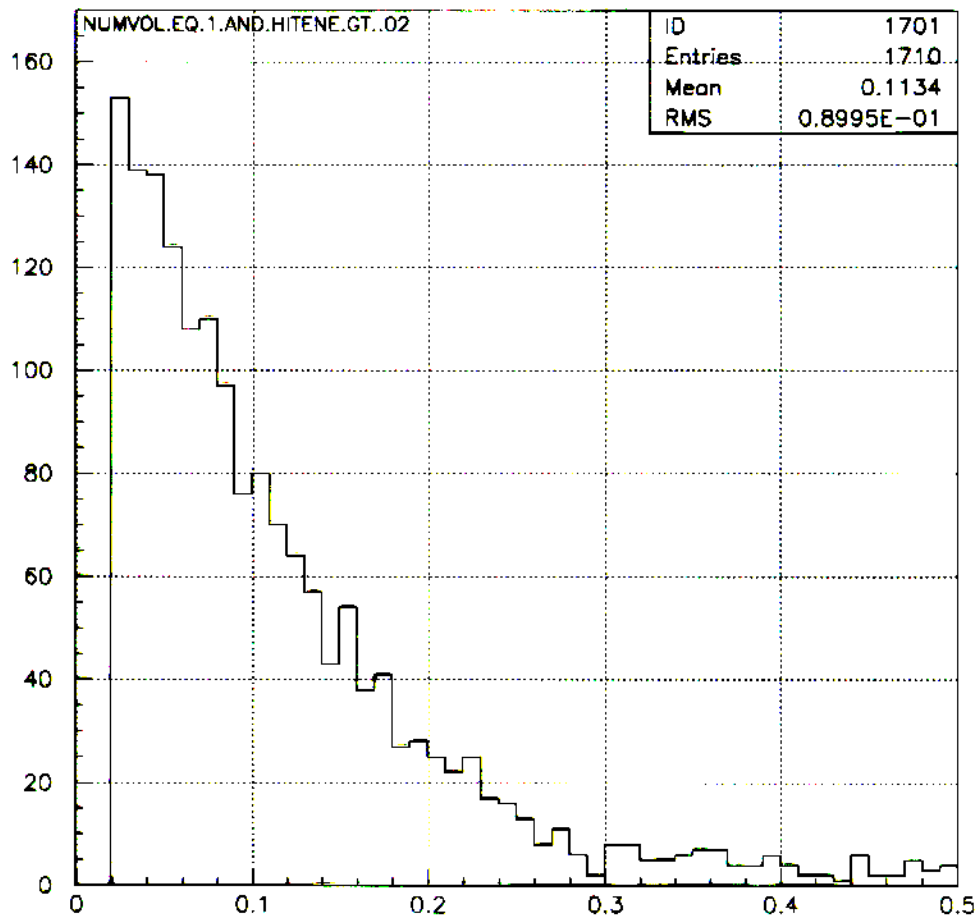
# What's new now

## Since the last meeting :

- **(Almost) full simulation with BRAHMS**
  - Use full tracking and hit forming in LUMI
  - Reliable evaluation of energy in instrumented region
  - Tried three (parameterized) energy resolutions.
- **New interesting spin-off ....**
- **Still to do**
  - Simulate complete stratigraphy
  - Simulate hit forming process
  - Finalize design.

# Hit Energy distribution (guinea\_pig)

Nominal situation TESLA\_HIGH

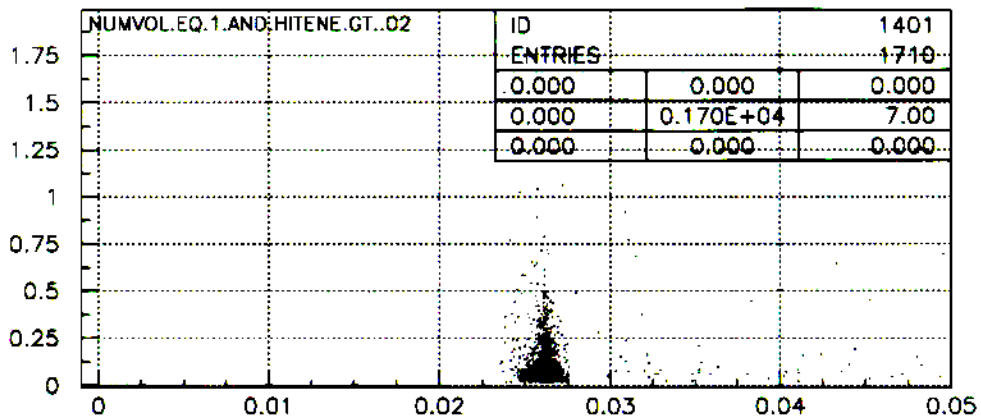


Hit energy distribution

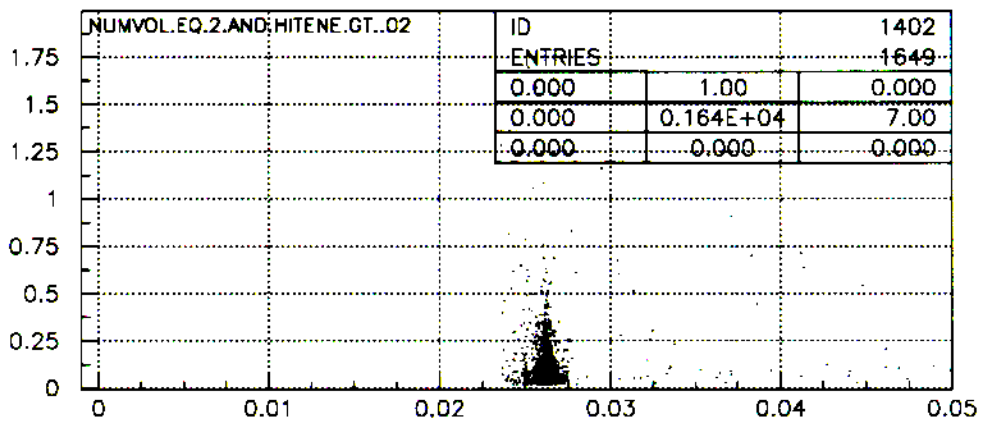
Marcello Piccolo

# Hit energy deposition vs $\theta$

## Nominal situation TESLA\_HIGH



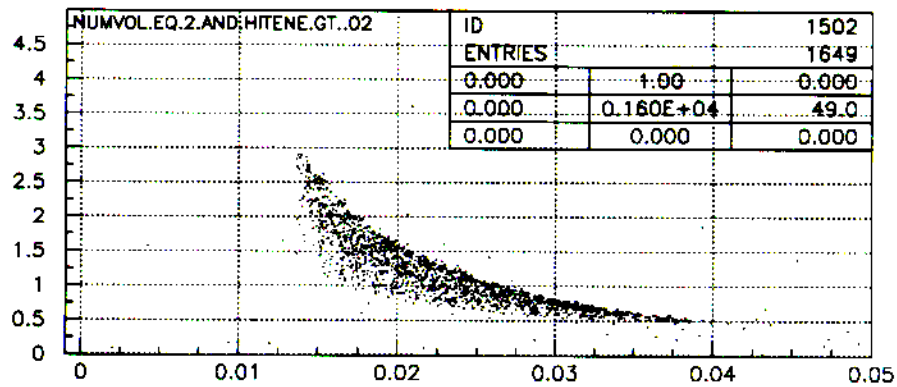
Theta distribution of the hit energy



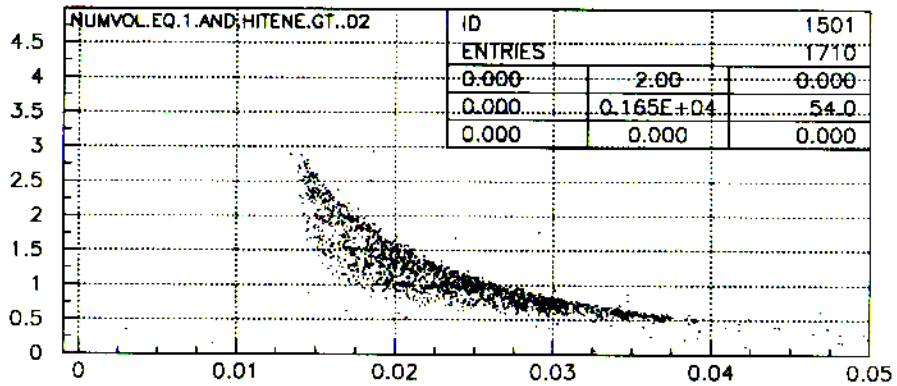
Theta distribution of the hit energy

# Originating particle energy VS $\theta$

## Nominal situation TESLA\_HIGH



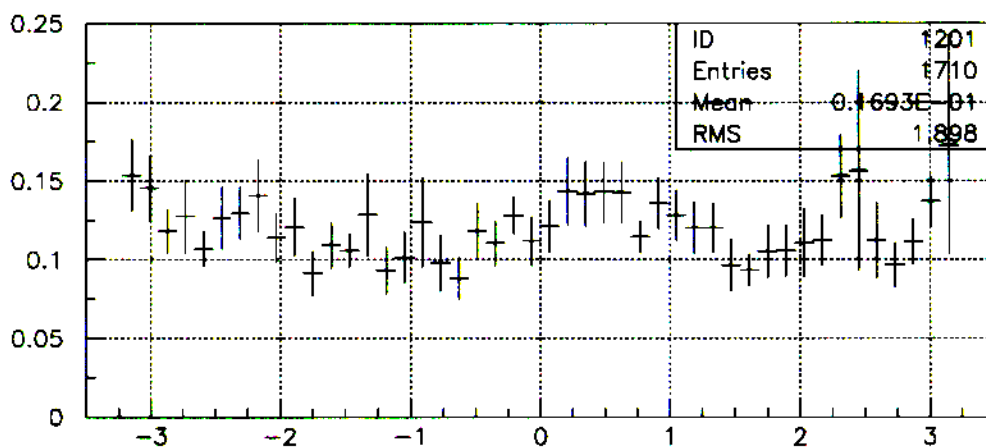
Theta distribution of the part. energy



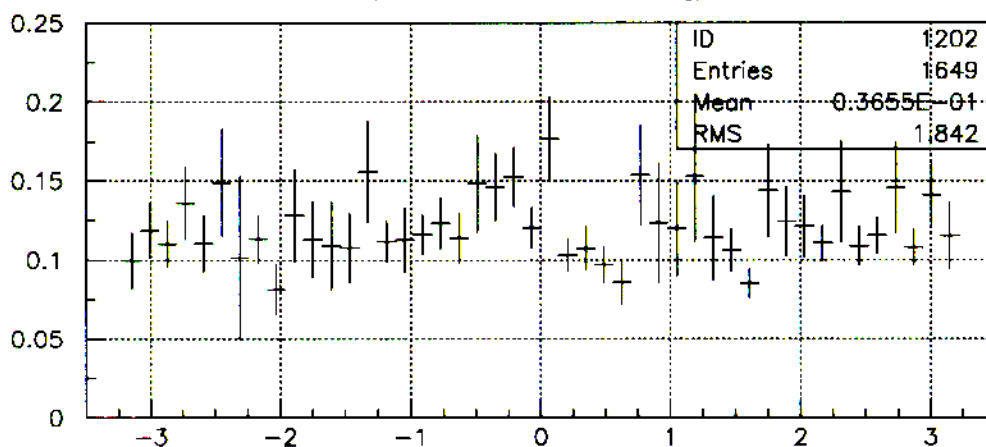
Theta distribution of the part. energy

# $\Phi$ distribution of hit energy

## Nominal situation TESLA\_HIGH



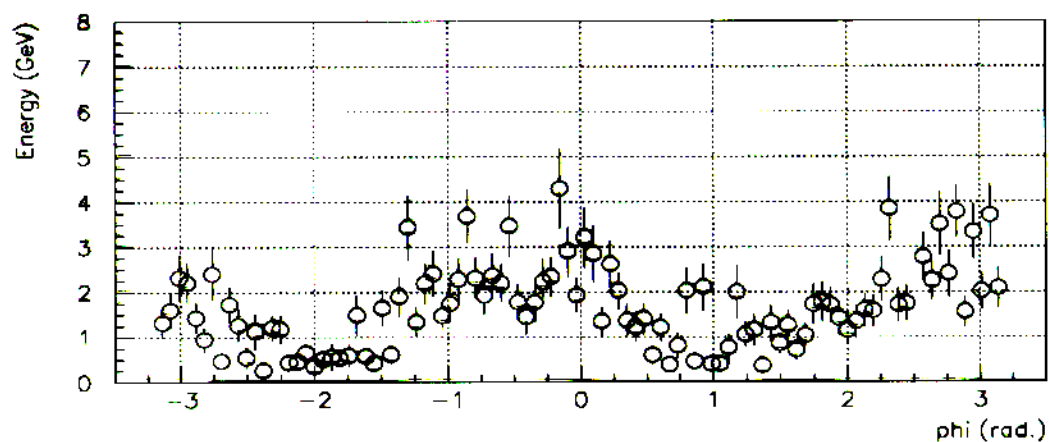
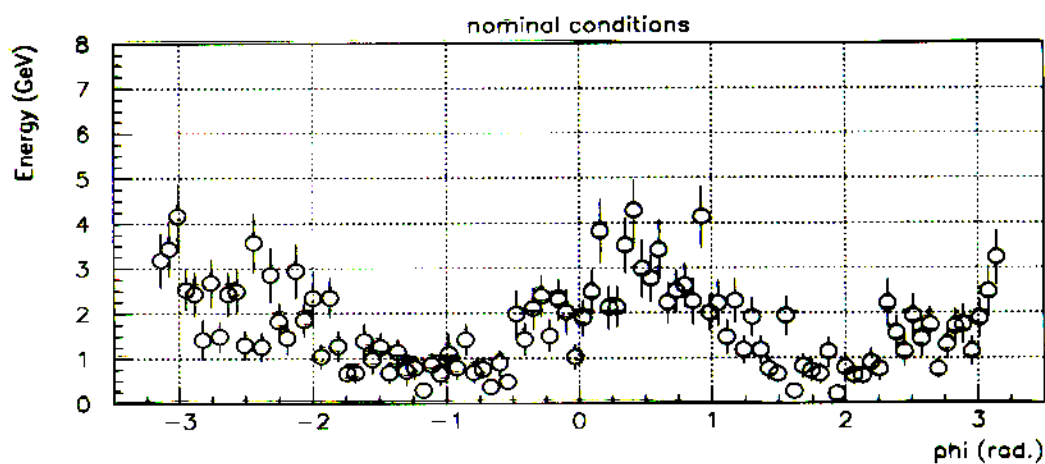
phi distribution of the energy



phi distribution of the energy

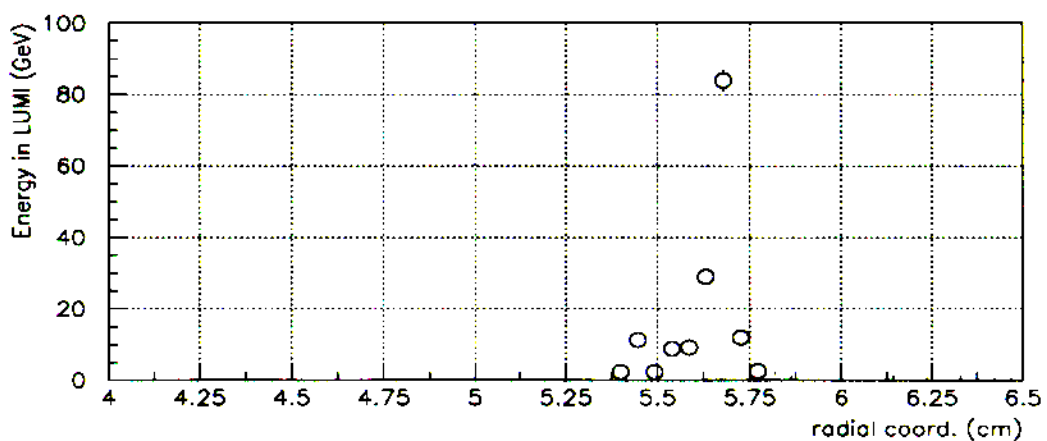
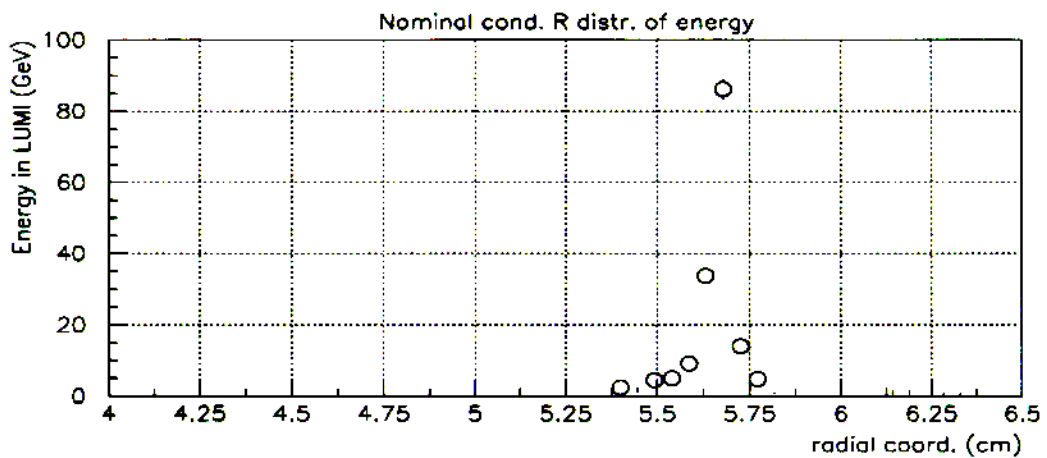
# $\Phi$ distribution of deposited energy

Nominal situation TESLA\_HIGH



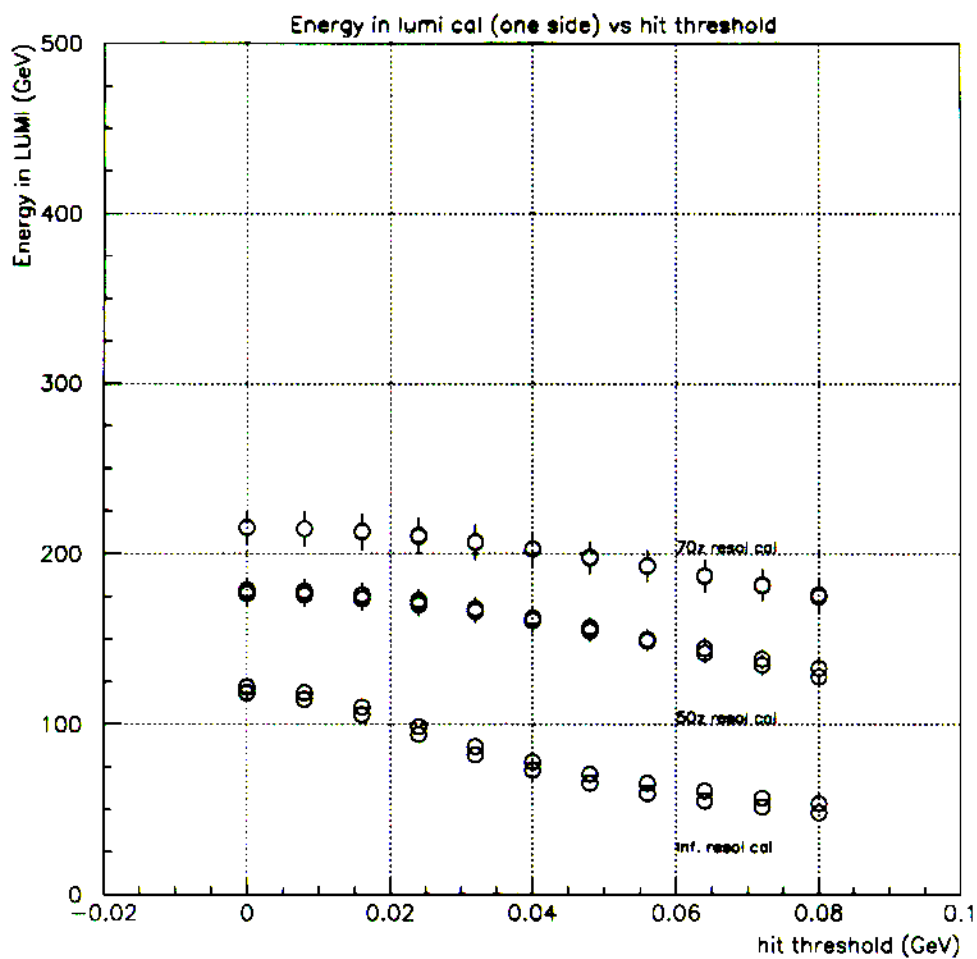
# R distribution of deposited energy

## Nominal situation TESLA\_HIGH



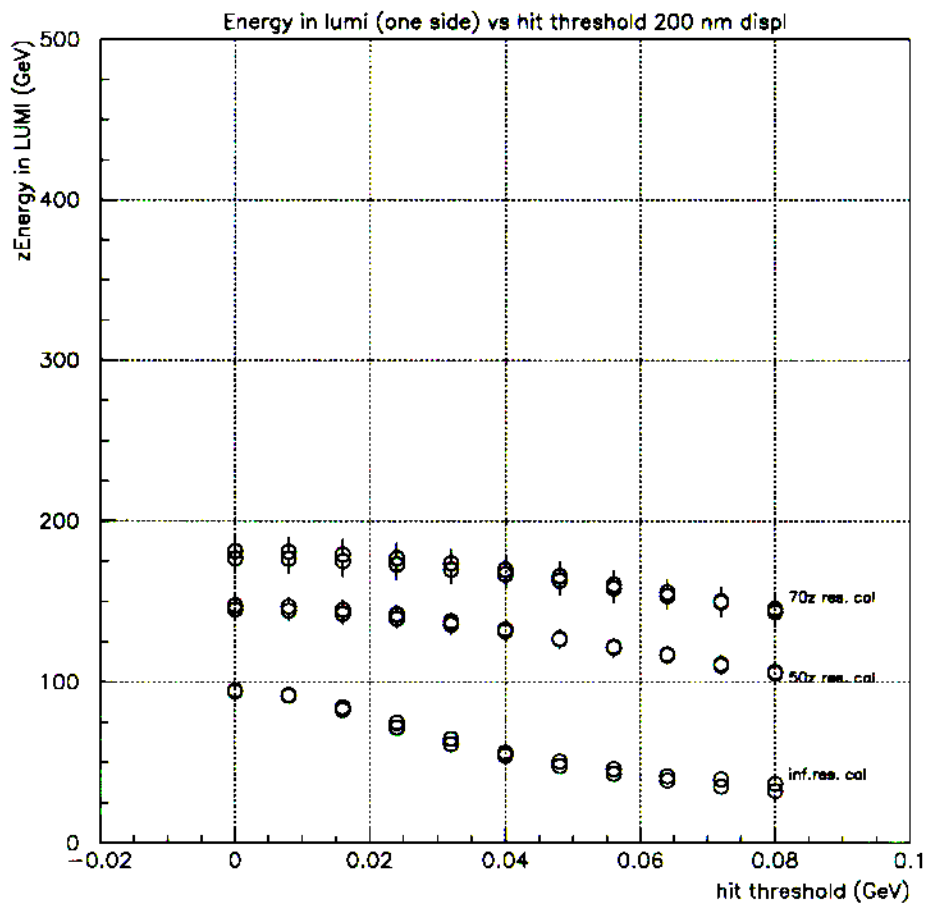
# Total energy collected vs hit threshold

## Nominal situation TESLA\_HIGH



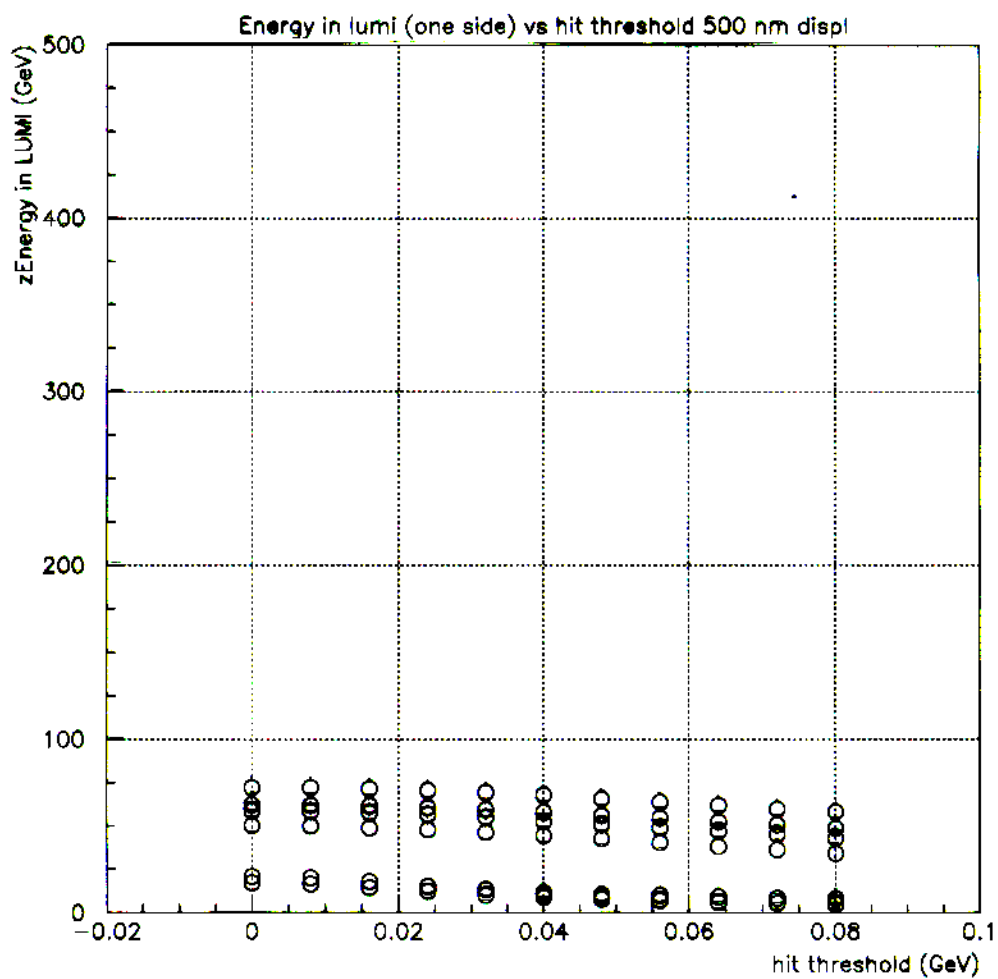
# Total energy collected vs hit threshold

## 200 nm displacement



# Total energy collected vs hit threshold

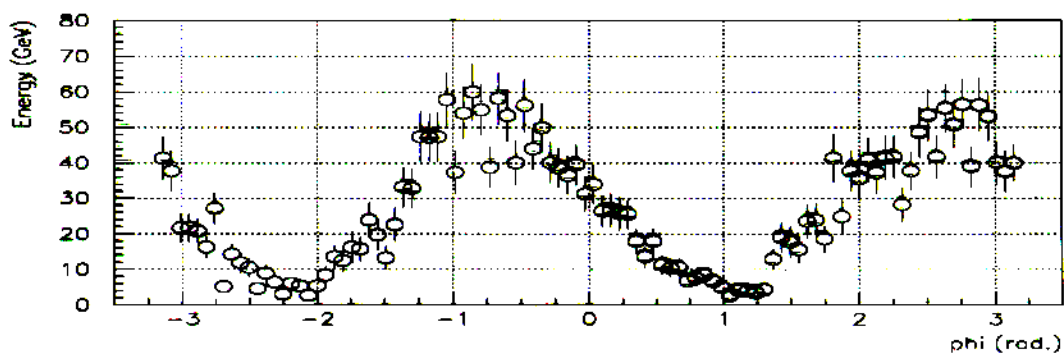
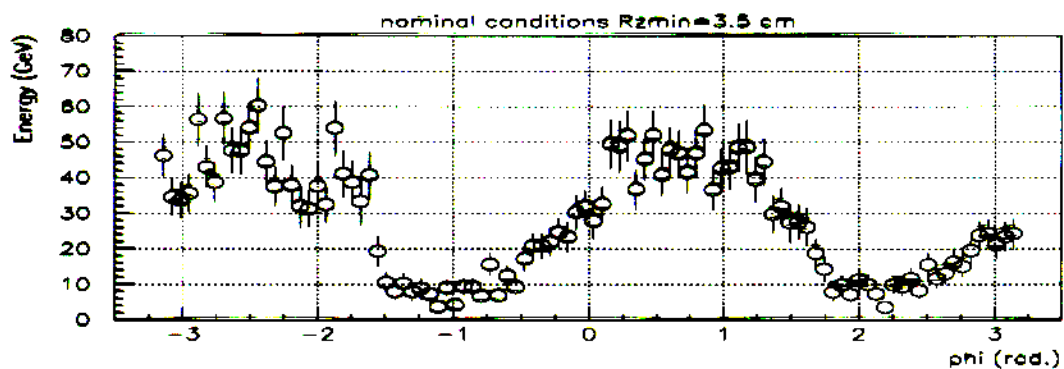
## 500 nm displacement



# $\Phi$ distribution of deposited energy

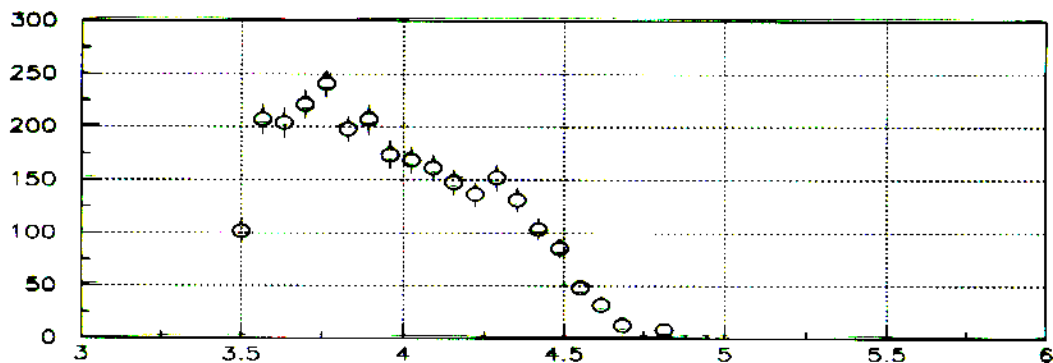
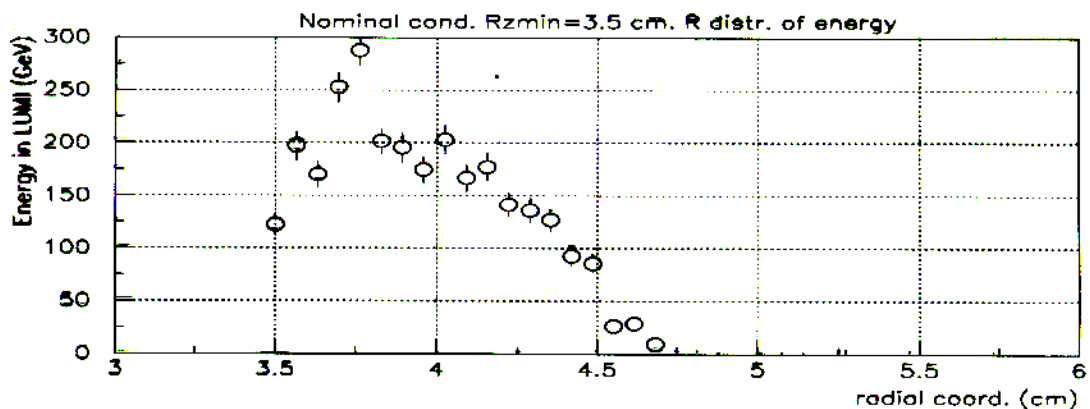
Nominal beam situation

$R_{\min} = 3.5 \text{ cm}$



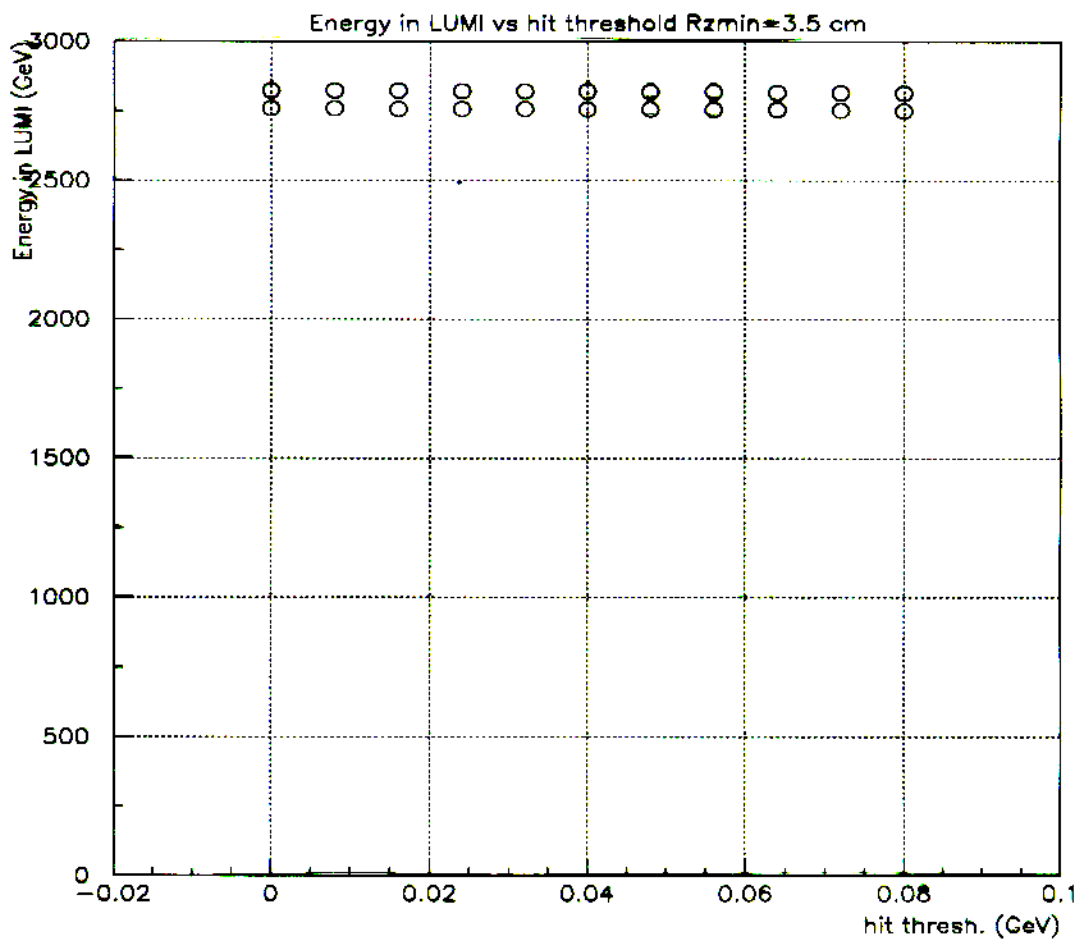
# R distribution of deposited energy $R_{\min} = 3.5$ cm

Nominal situation TESLA\_MGH  $R_{\min} = 3.5$  cm



# Total energy collected vs hit threshold 3.5 cm min radial coord.

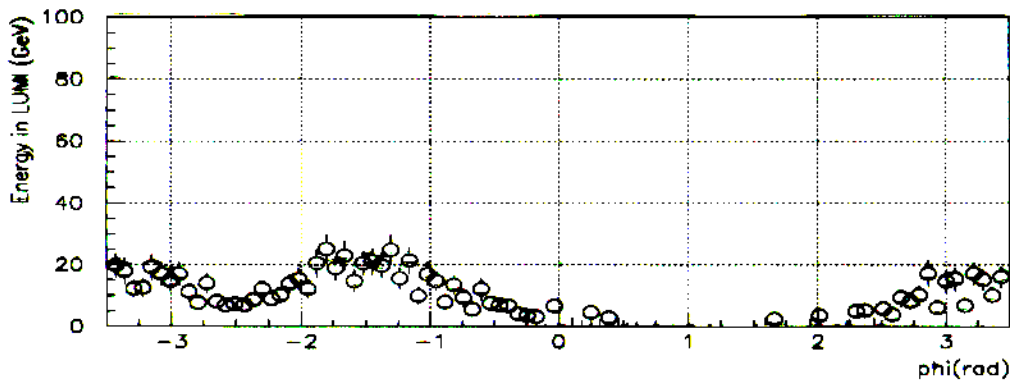
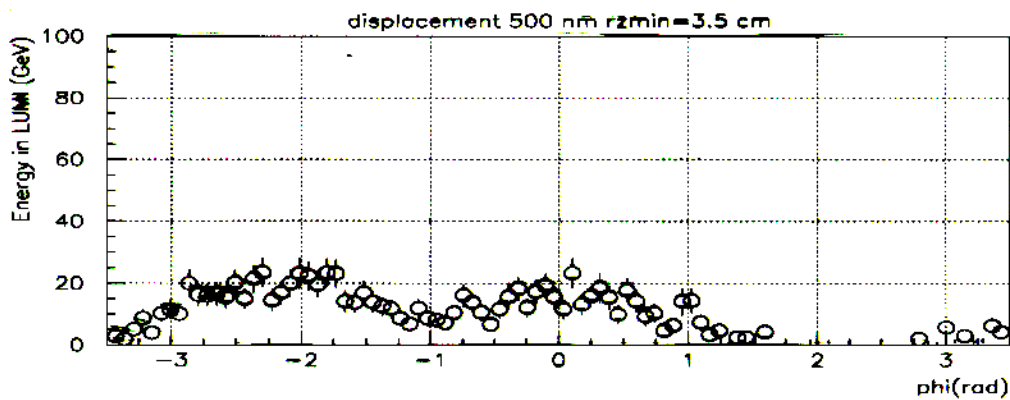
Nominal situation TESLA\_HIGH  $R_{min}$  3.5 cm



# $\Phi$ Energy distribution $R_{\min}$ 3.5 cm

beam displacement 500 nm.

$R_{\min} = 3.5$  cm





## **There is an other feature ...**

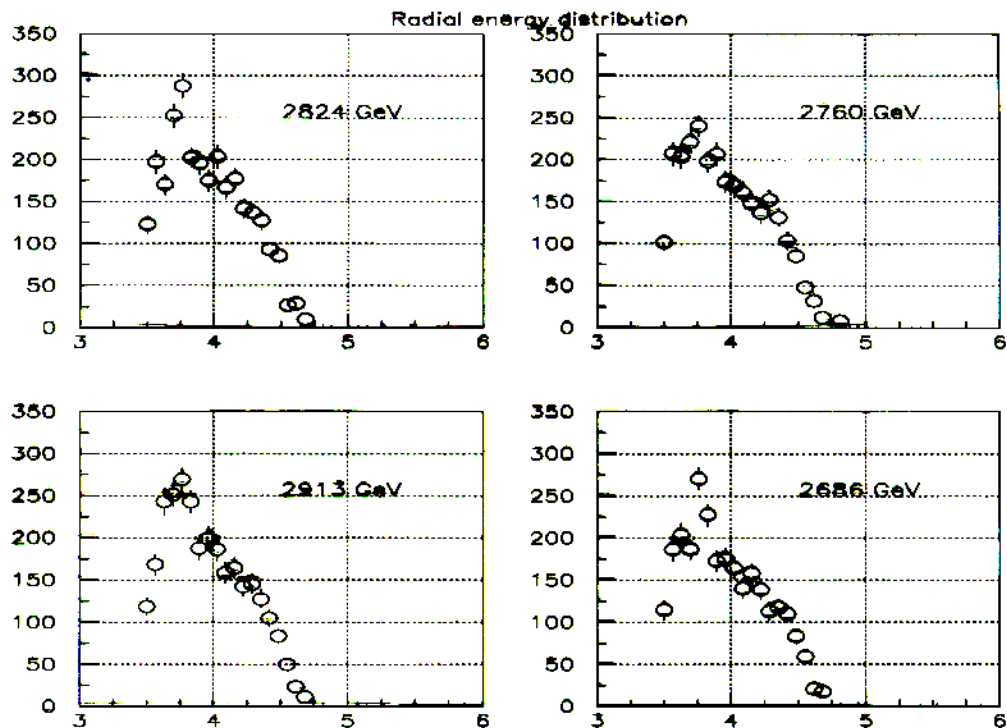
**As of now all the results shown were based on one single beam beam interaction.**

**I decided to generate an other one ... just for the fun of it.**

**I stumbled into something which in my opinion is very interesting.**

# Energy deposition vs R : two different beam interactions

Two different beam interactions  
deposit different energies in the two  
LUMI cats ... measure  $E_{\text{cm}}$   $\beta_{\text{cm}}$  ??



# Conclusions

**Given my overwhelming optimism I can't see any big show stopper I believe we have enough information to start a complete design.**

**Interesting new features: possibilities of measuring not only luminosity on a pulse by pulse basis but also c.m. energy and energy difference for the two beams.**