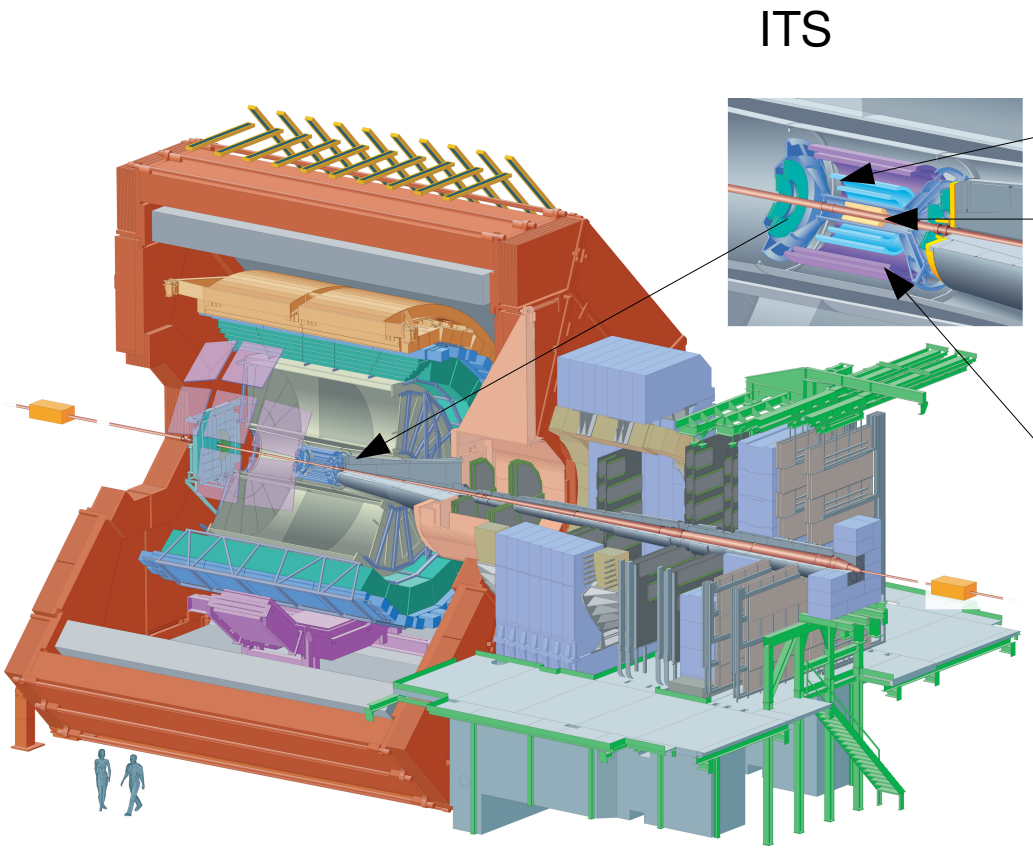
Preparation of the SSD for the first physics in ALICE

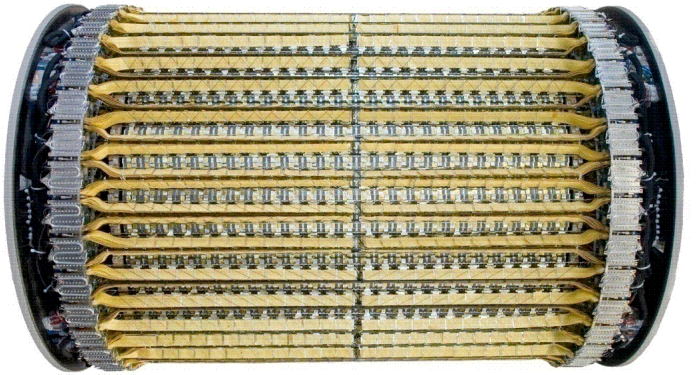
Marek Chojnacki

UU

Universiteit Utrecht

SSD@ALICE@LHC

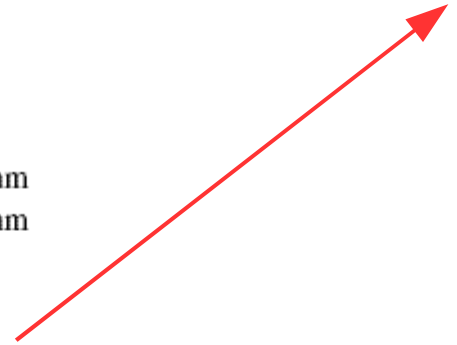




SSD in numbers

Table 3.11. SSD system parameters.

Sensor active area	73×40 mm^2
Sensor total area	75×42 mm^2
Number of strips per sensor	2×768
Pitch of sensors on a ladder	39.1 mm
Strip pitch on a sensor	95 μm
Strip orientation p side	7.5 mrad
Strip orientation n side	27.5 mrad
Spatial precision $r\varphi$	20 μm
Spatial precision z	820 μm
Two track resolution $r\varphi$	300 μm
Two track resolution z	2400 μm
Radius layer 5 (lowest/highest)	378/384 mm
Radius layer 6 (lowest/highest)	428/434 mm
Number of ladders layer 5	34
Number of ladders layer 6	38
Modules per ladder layer 5	22
Modules per ladder layer 6	25
Number of modules layer 5	748
Number of modules layer 6	950
Material budget SSD cone	$0.28X_0$
Material budget per SSD layer	$0.81X_0$ (layer 5), $0.83X_0$ (layer 6)

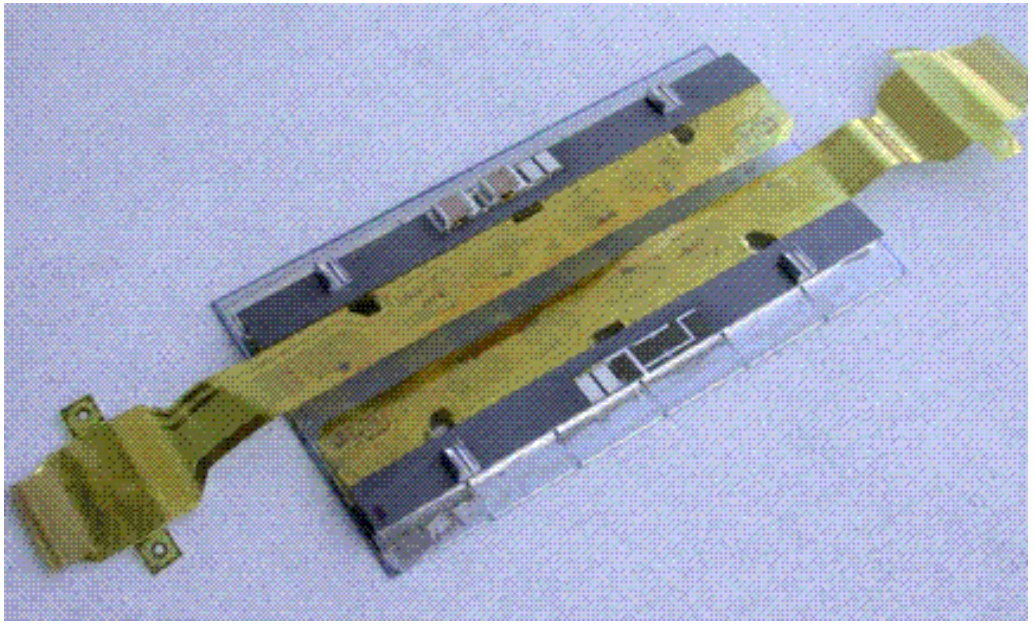


1536 strips per module

1698 modules

2608128 channels

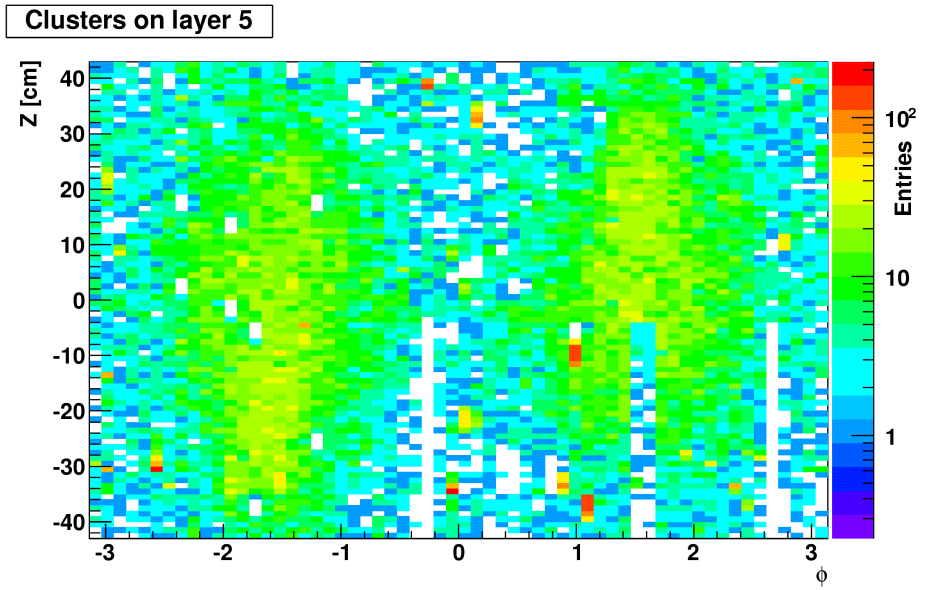
What can SSD do?

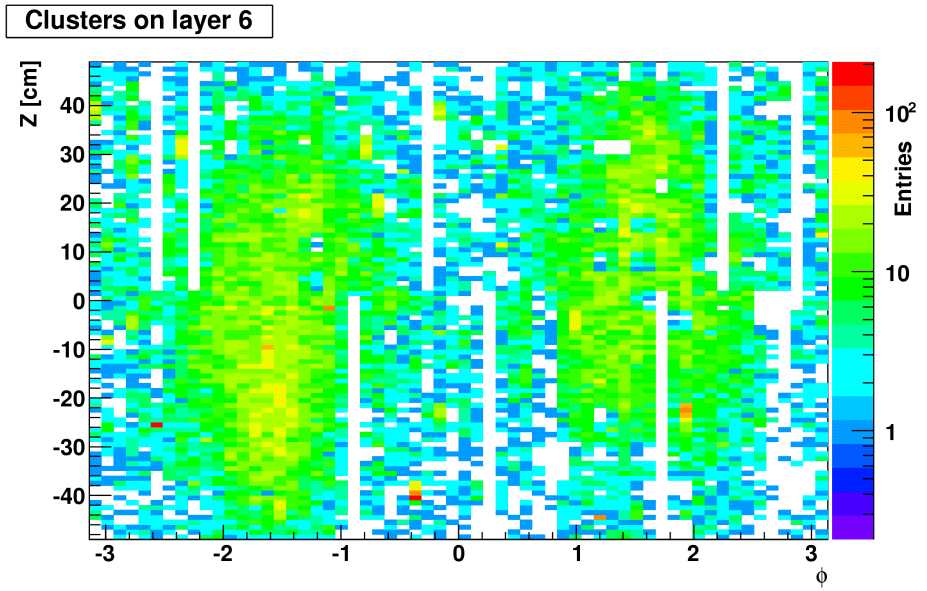


SSD module

Two type of strips (P, N) can collected opposite charge, so they can measure the energy loss **, which is used in particle identification (My job)** . Crossing angle between strips is 35 mrad, so this gives 2D information. Position of a module in the ALICE gives the third coordinate.

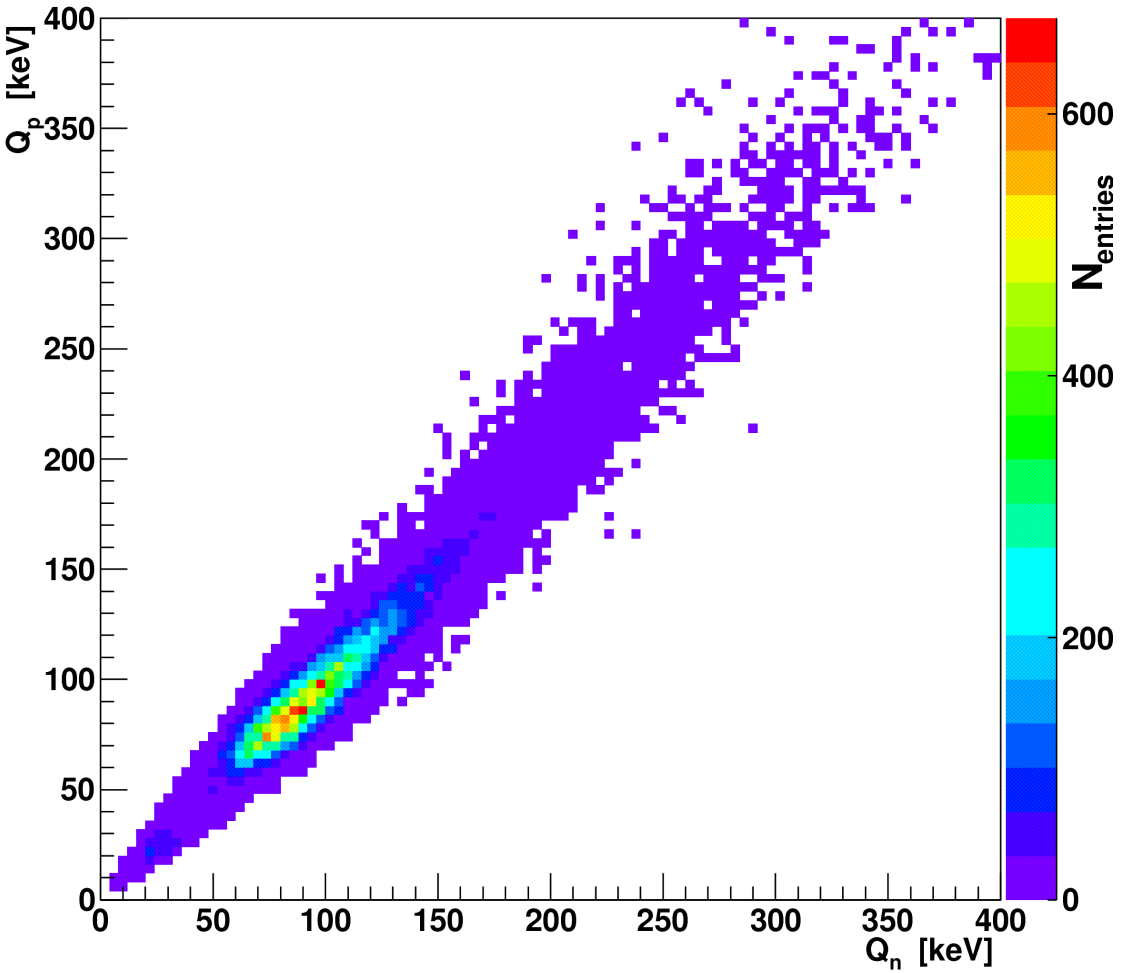
Cosmics in 2008





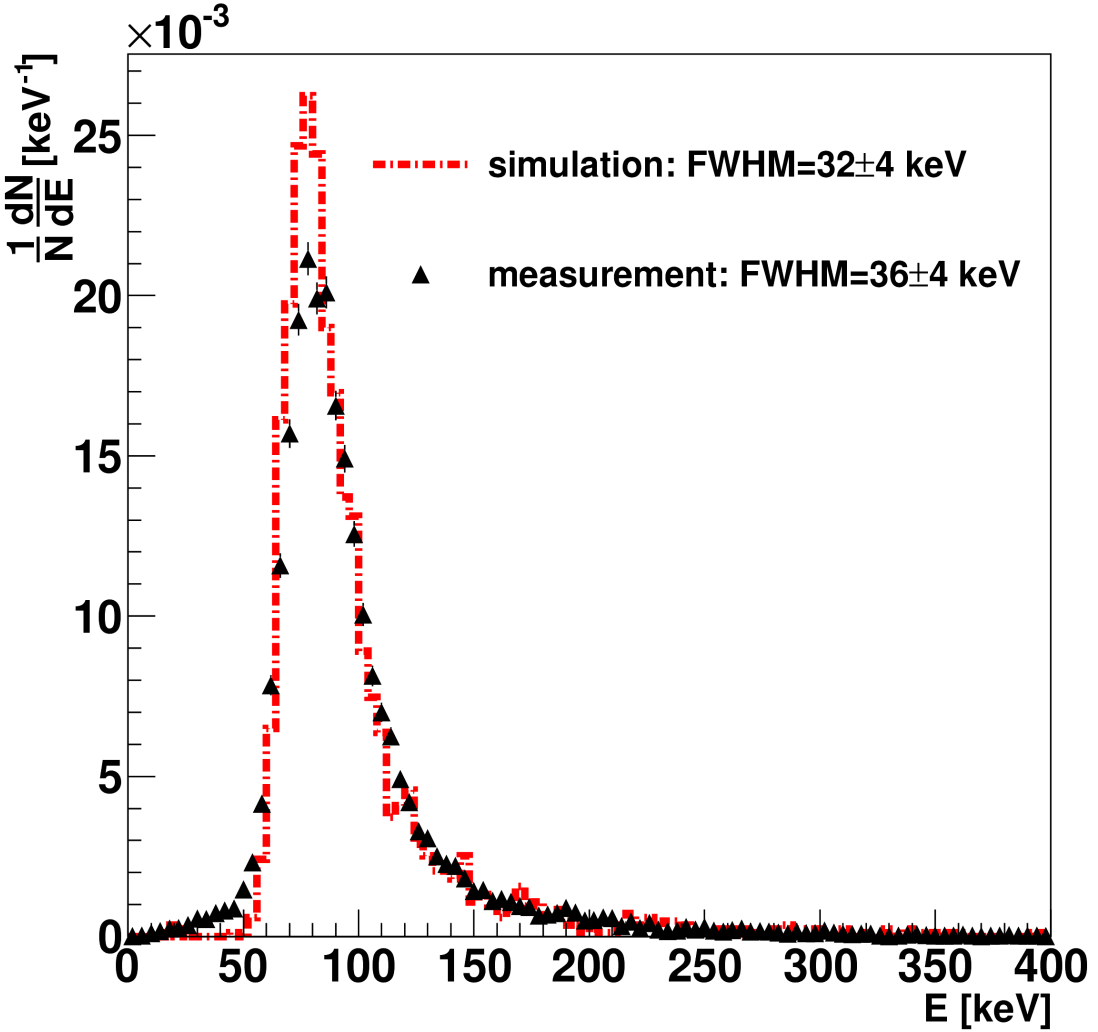
Runs were triggered by the SPD, so the SSD detected most cluster in the centre.

Charge matching



Charge on P-side should be this same as on N-side. This plot shows performance of charge matching in SSD in cosmic data.

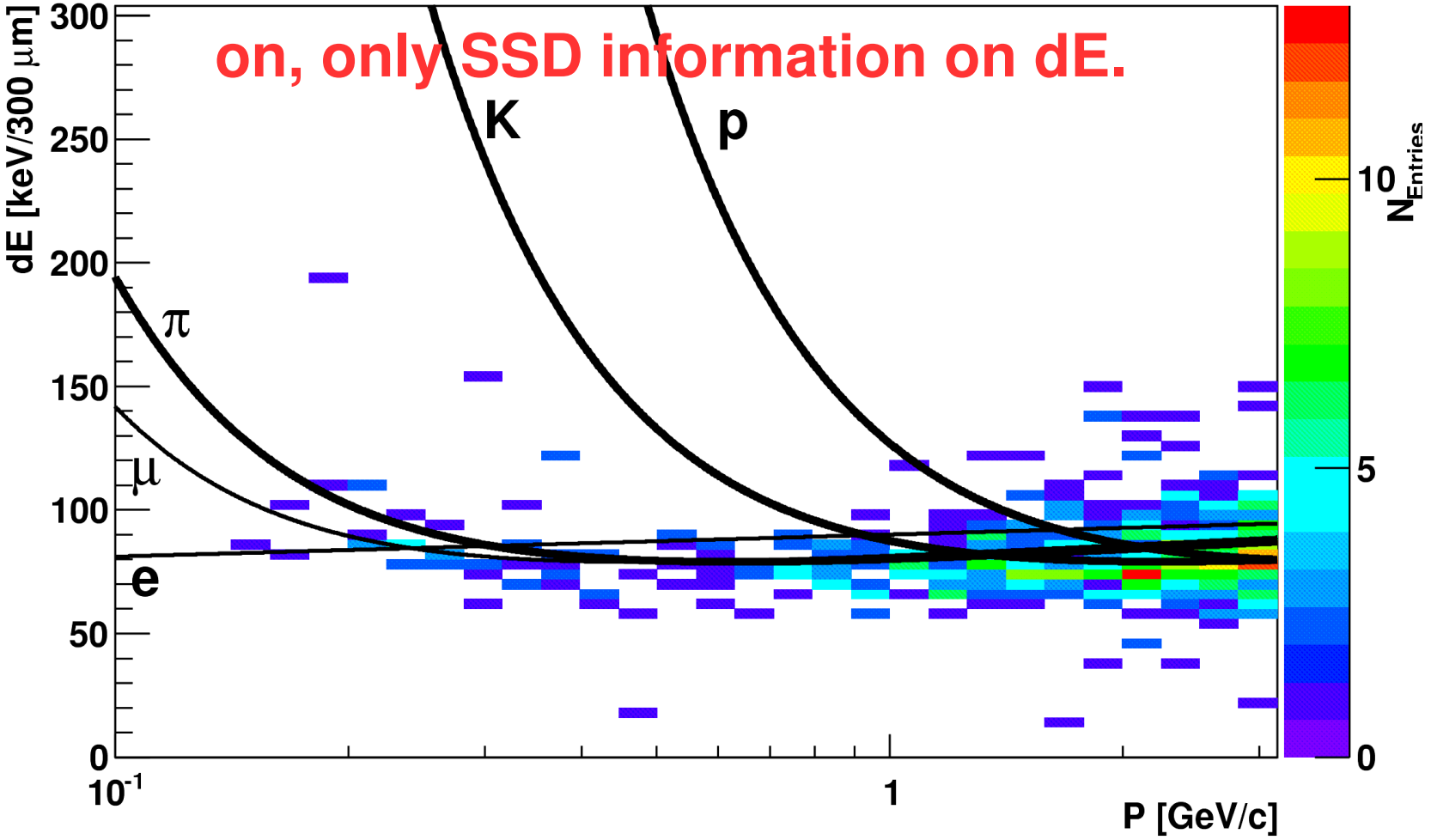
Global Charge



Measured charged, which is an average of P and N side charge should follow the Landau distribution convoluted with Gauss distribution (noise effects).

dEdx

Cosmic tracks taken with the field on, only SSD information on dE.



Why we need SSD ?

- Connect tracks from the TPC with ITS , very important in HI.
- Detected tracks which can not reach TPC (soft pions , kaons ...).
- Give additional information to particle identification.

We want more!!!