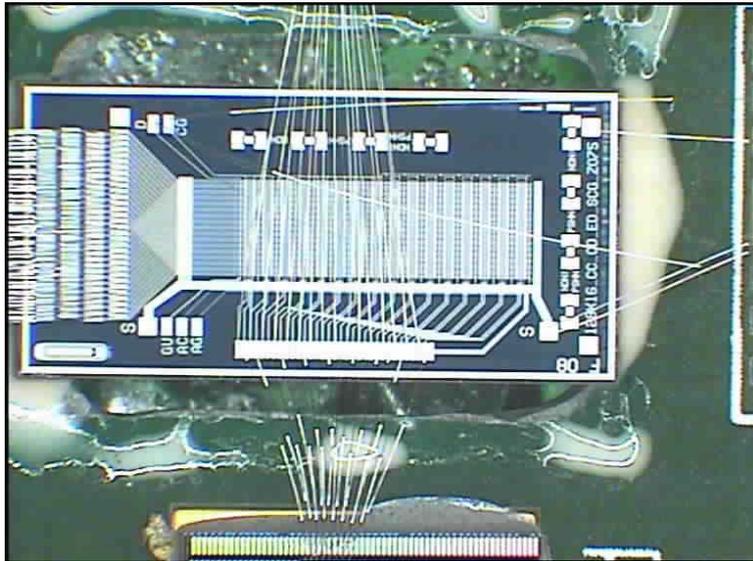




First results from the tests on PXD6
matrices

Jelena Ninkovic for the HLL team

● S3B system with Belle matrix



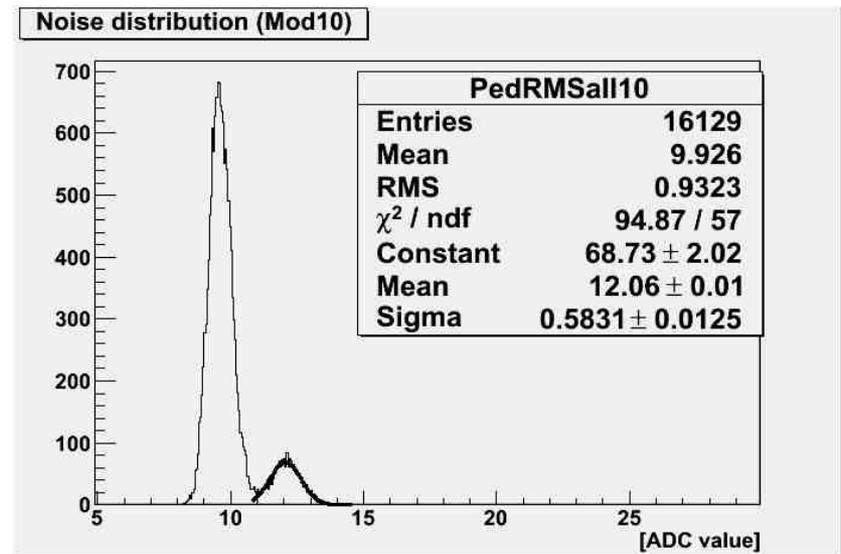
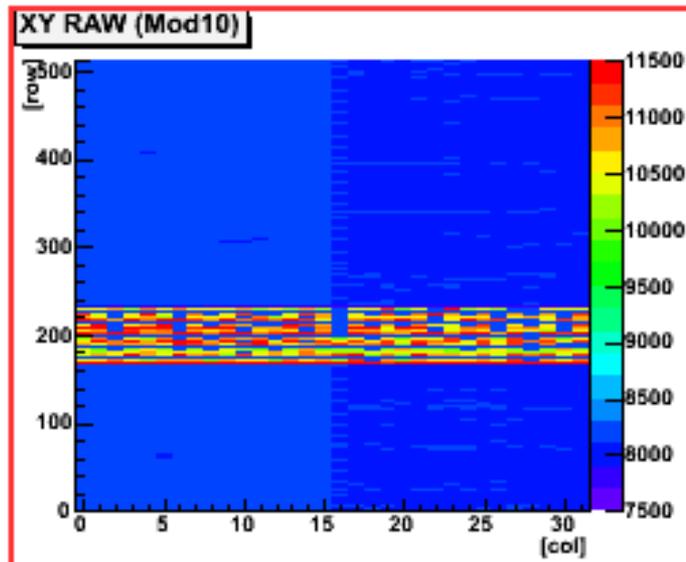
S3B system : CURO (128ch) +SW3 (128ch)

Belle matrices under test 6 μ m gate length

H 3.0.17: 50x75x50 μ m³

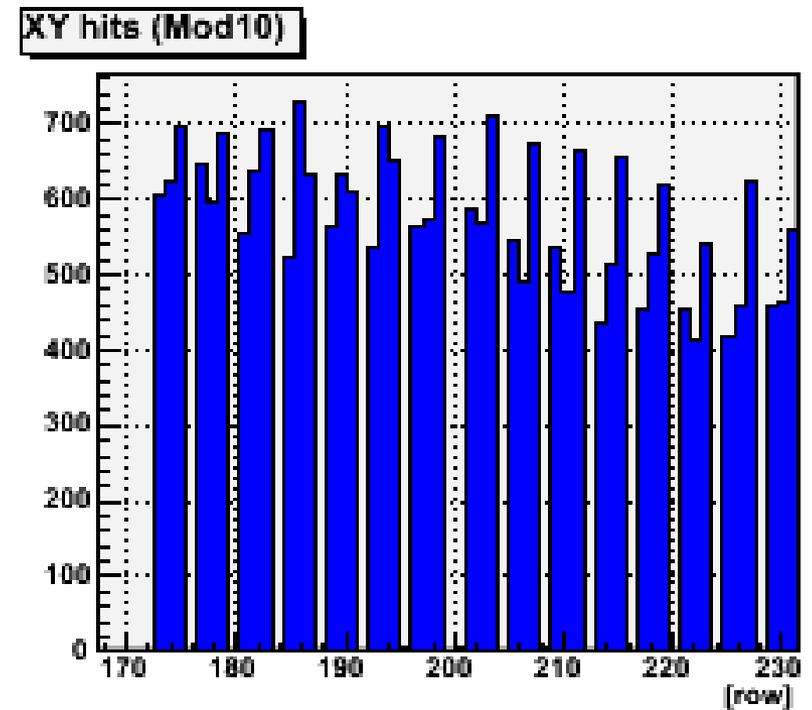
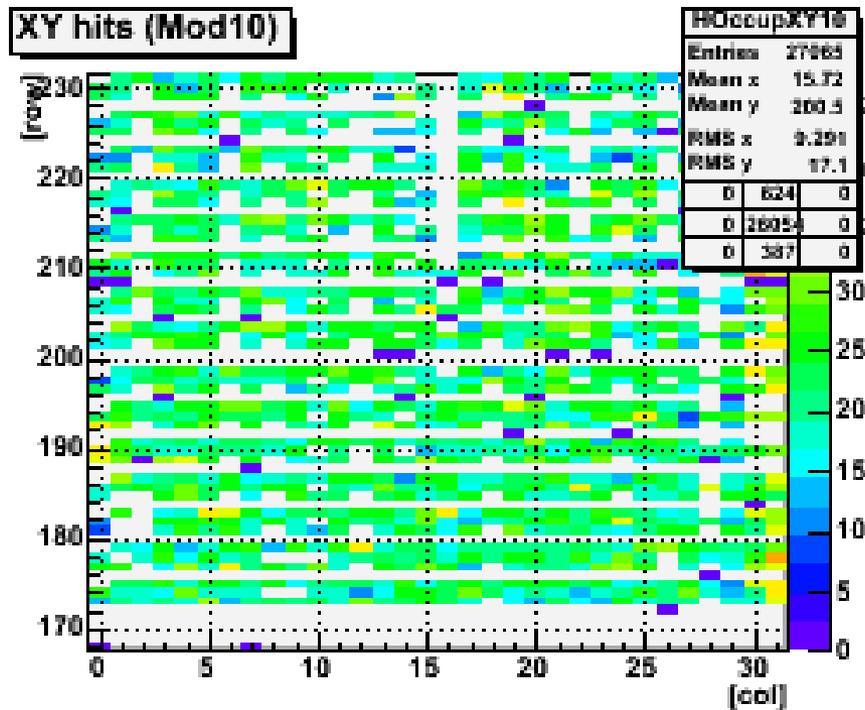
H 3.0.21: 50x75x450 μ m³

128 drain lines and 16 gate lines \rightarrow 32x64 pixels



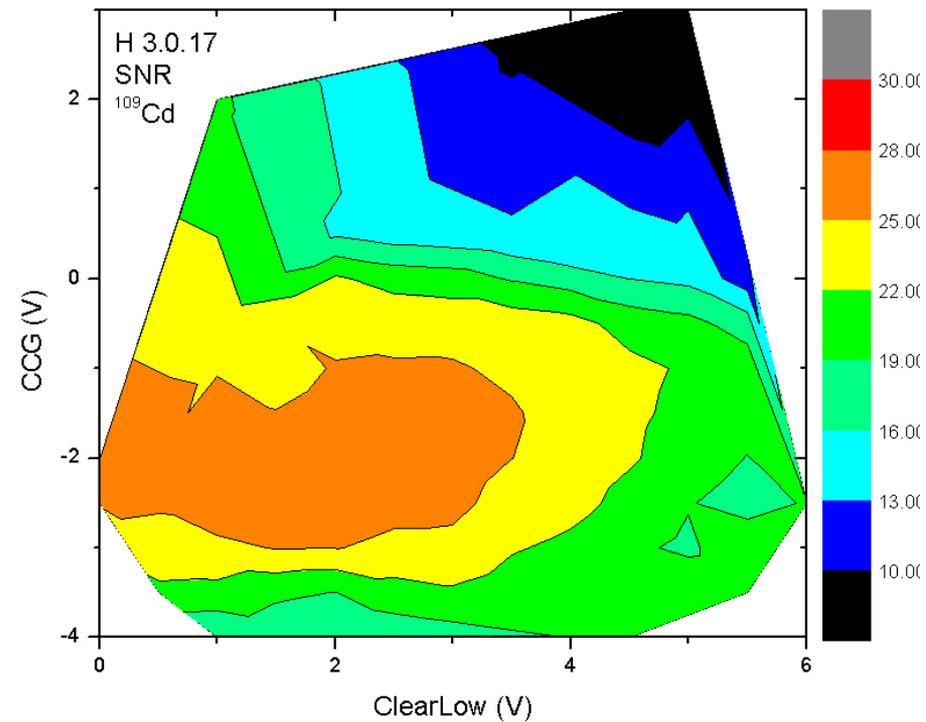
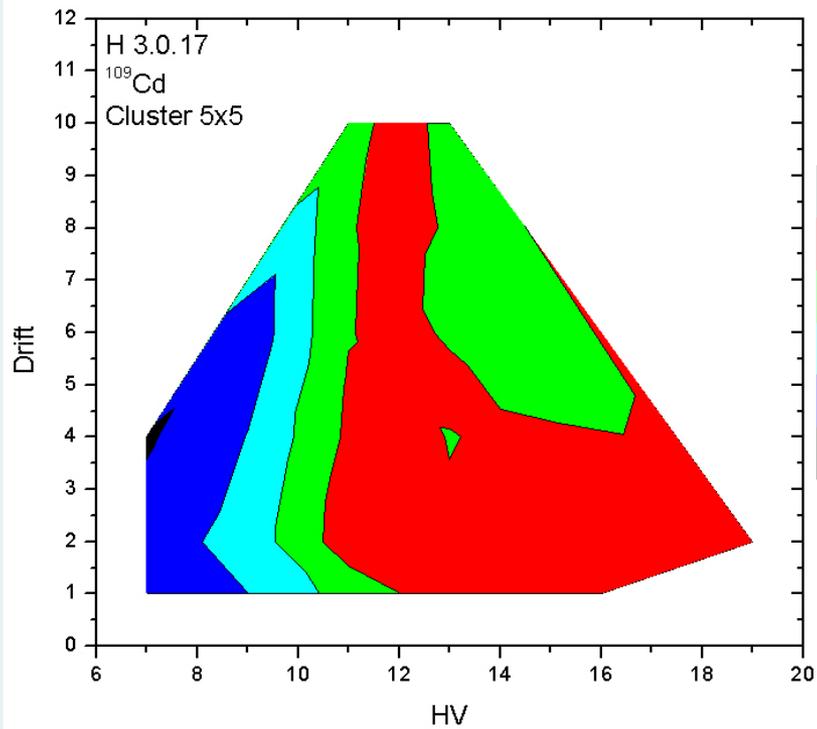
● Features

Thin matrix H 3.0.17



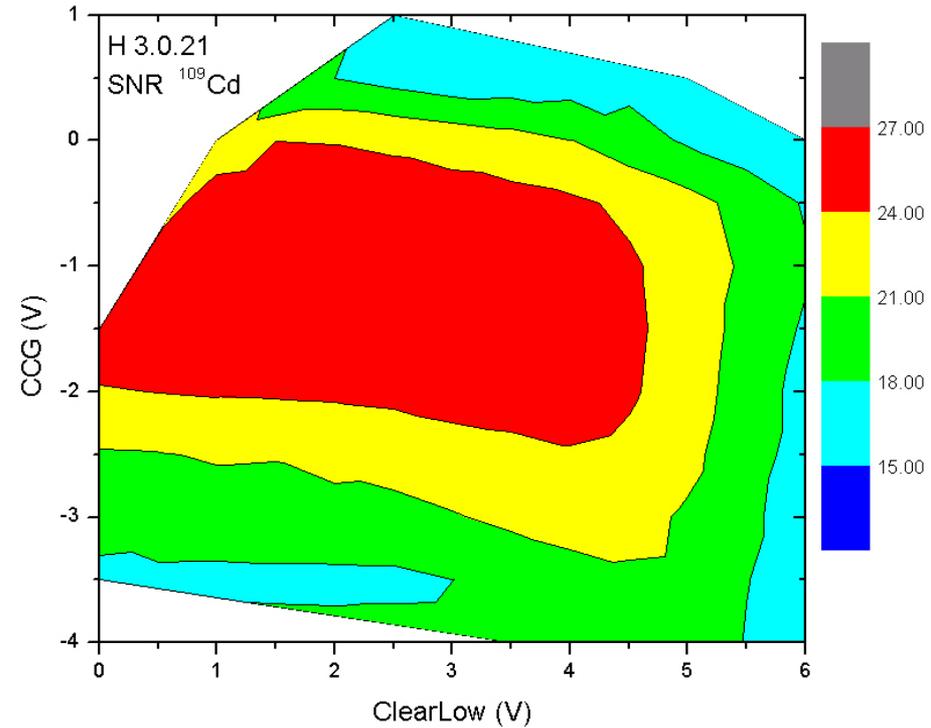
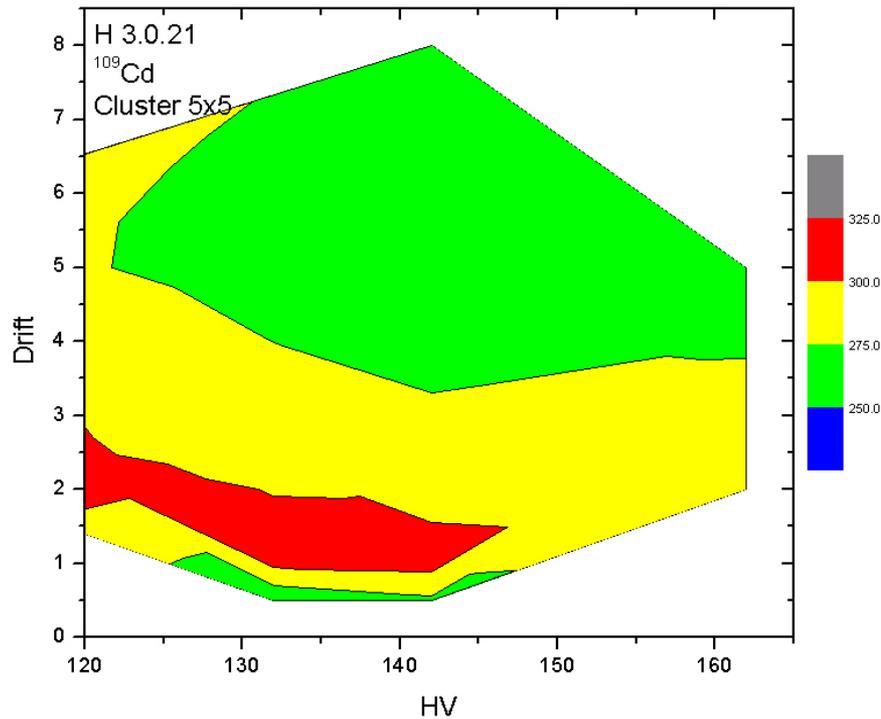
Hybrids optimization H 3.0.17

Thin matrix



Hybrids optimisation H 3.0.21

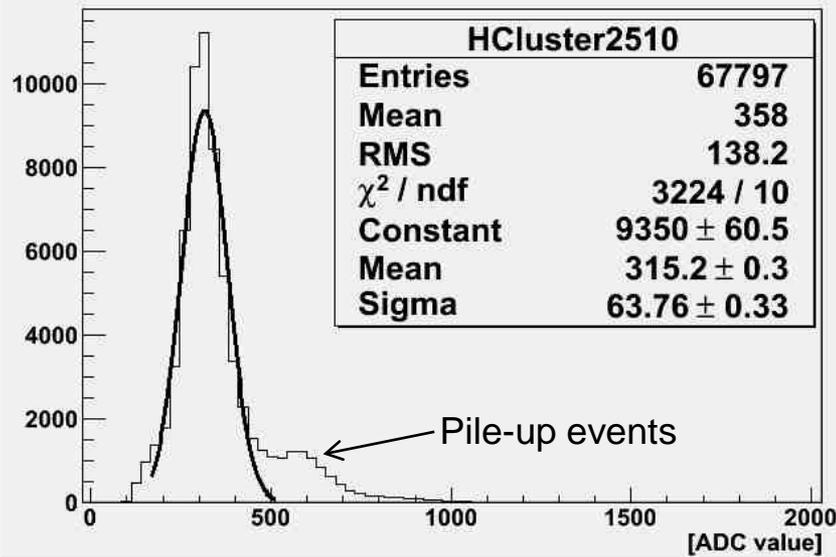
Thick matrix



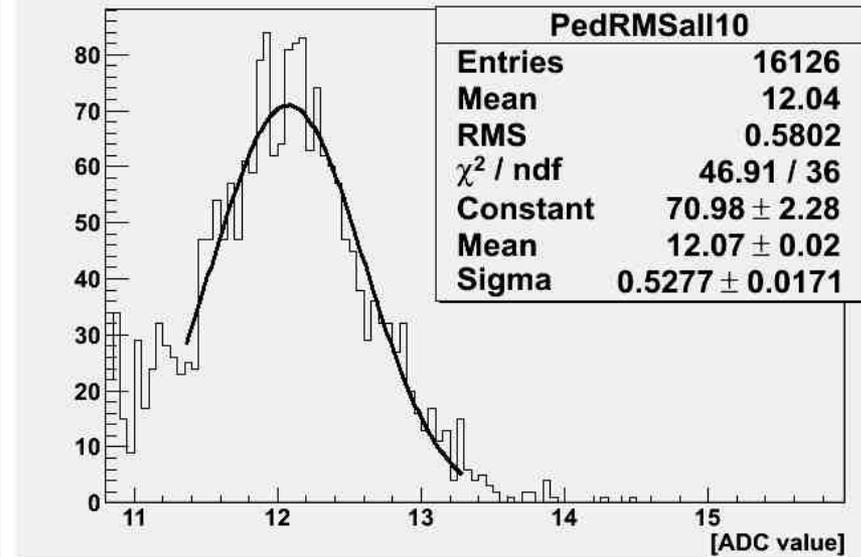
● H 3.0.21

Thick matrix: 32x64 pixels Belle II PXD design, pixel size 50 x 75 x 450 μm^3 (6 μm gate length)

Cluster 5x5 (Mod10)(RunNo6242)



Noise distribution (Mod10)



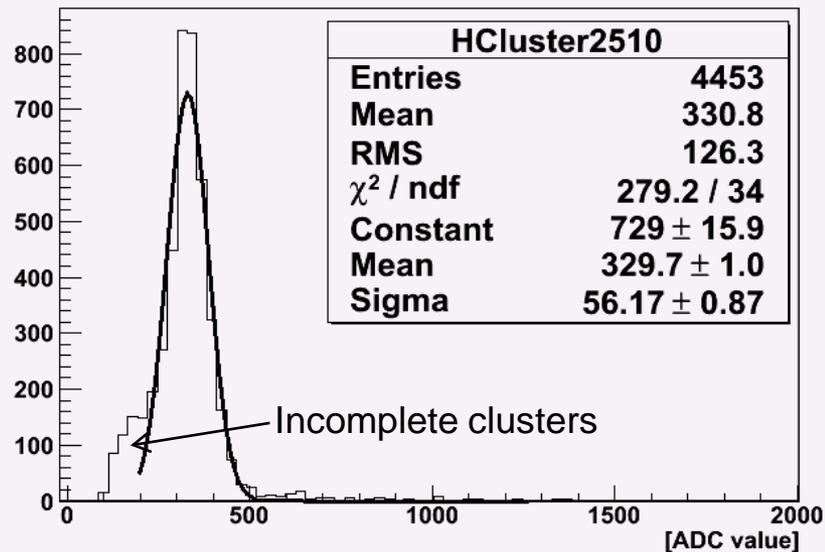
Optimal operation point : S/N = 26.11 at 22keV (^{109}Cd)

6 μm gate length (telescope modules) from PXD5 had S/N=20

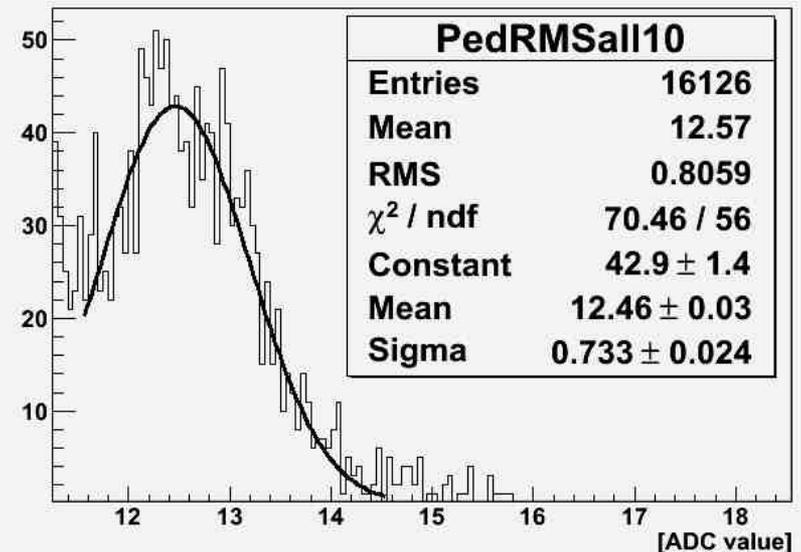
● H 3.0.17

Thin matrix: 32x64 pixels Belle II PXD design, pixel size 50 x 75 x 50 μm^3 (6 μm gate length)

Cluster 5x5 (Mod10)(RunNo6484)



Noise distribution (Mod10)



Optimal operation point : S/N = 26.5 at 22keV (^{109}Cd)

S/N independent of thickness
under γ irradiation!

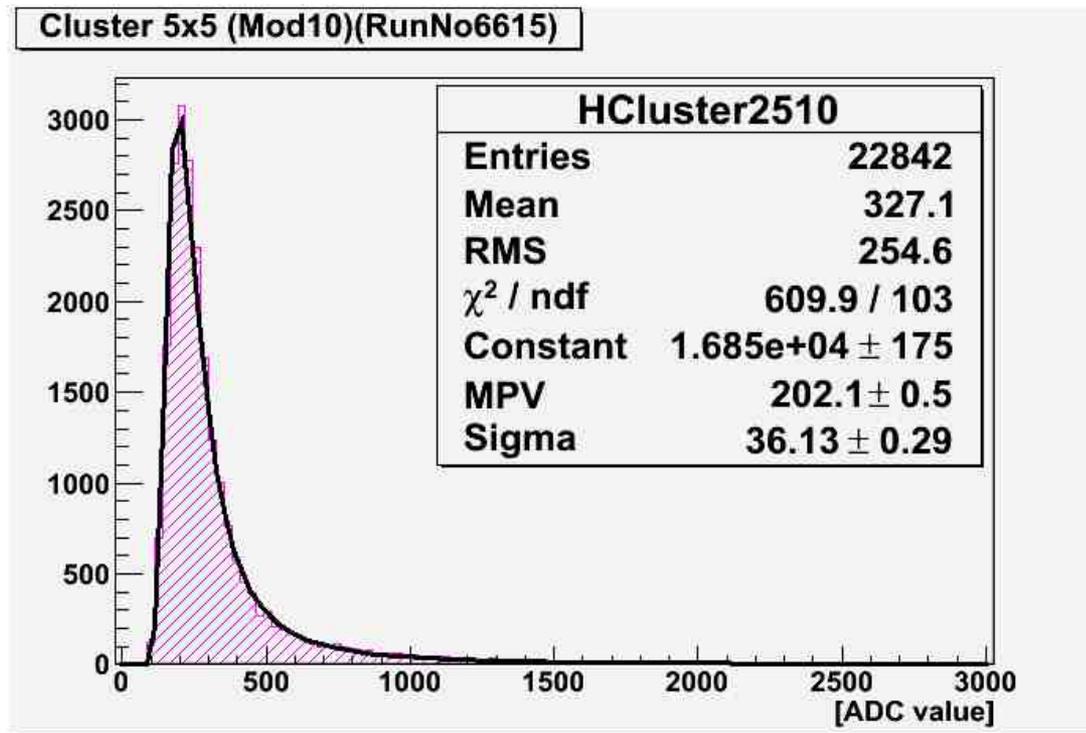
● H 3.0.17 50 μ m thin DEPFET matrix & ^{90}Sr

β source to “simulate” MIPs

1ADU = 18.5 e (329.7ADU from 22keV)

202ADU \rightarrow 3744 e

50 μ m*80e \rightarrow 4000 e



S/N=16.2

● THANKS



- Thanks to all the people involved at the University of Bonn and University of Heidelberg!