

# First results on strip clustering + PandoraPFA

daniel jeans, 16/4/08

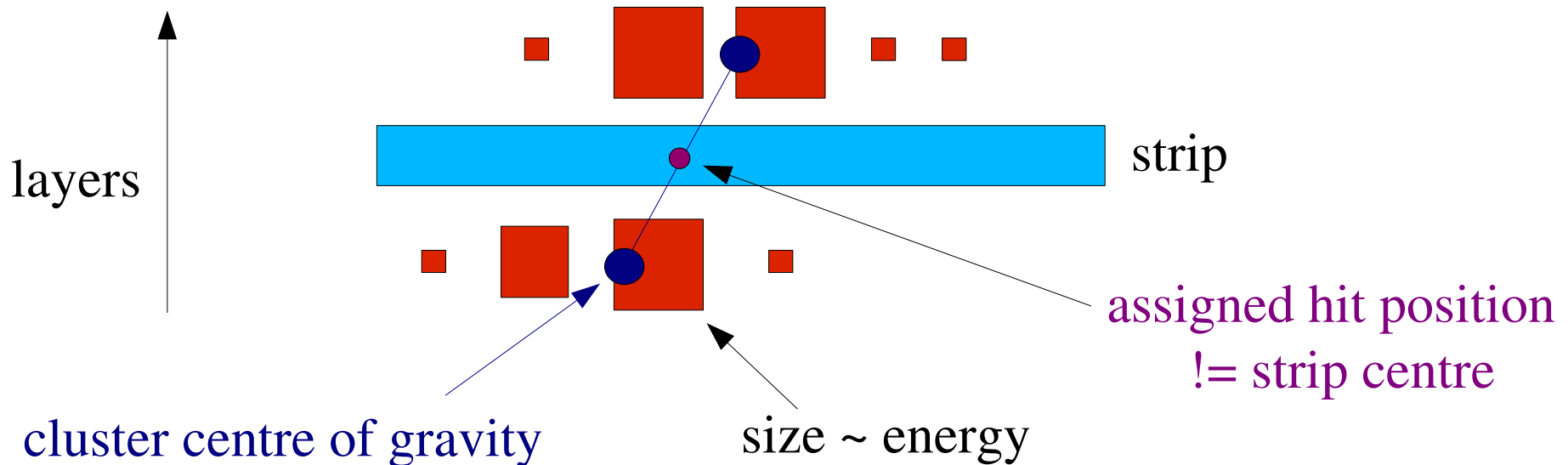
PandoraPFA significantly better performance than my “stripPFA”

attempt to combine the two approaches

-> more robust/believable optimisation of strip size

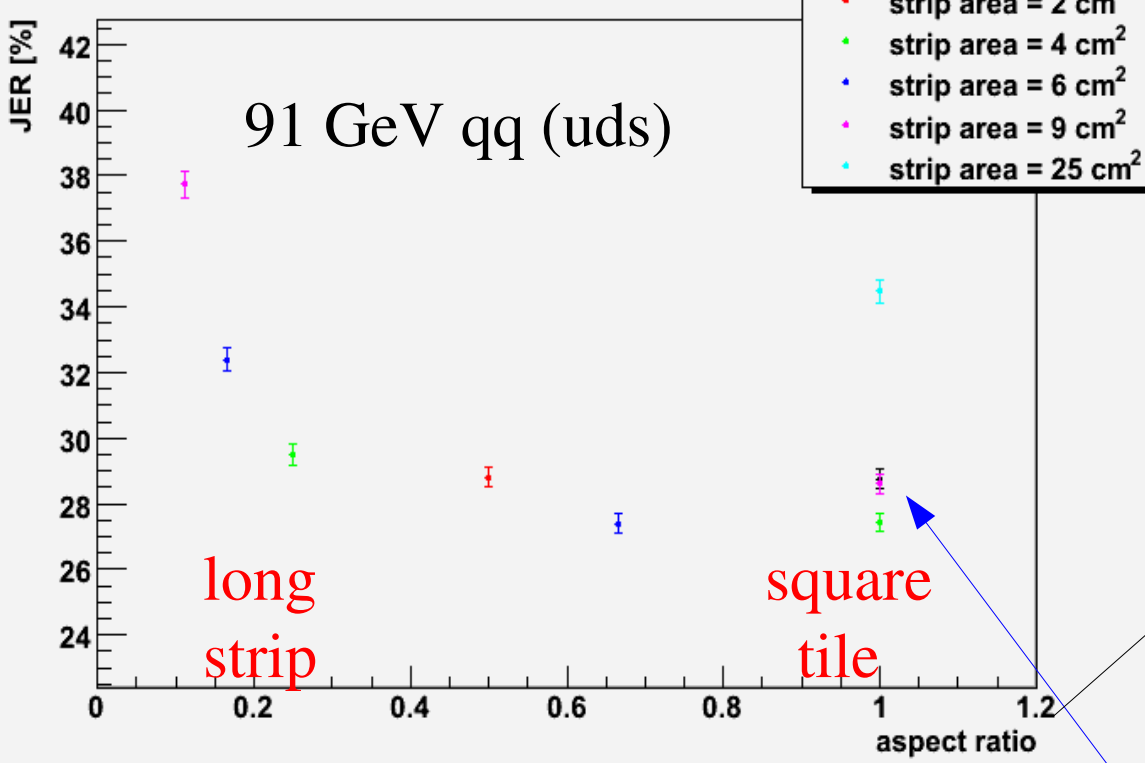
adopted relatively simple (but probably not most elegant) way  
to combine to two approaches

first pass: run my initial strip clustering (for now, no track seeding)  
by looking at energy deposits in neighbouring layers,  
choose “optimal” position for hit position



then pass these new hit positions (with original energy) to PandoraPFA  
using GLDdec07 geometry, LDC real tracking, calibration constants from Uozumi-san

JER\_aspectRatio



EM/HAD strips have same size

no strong dependence on strip size up to O(10)cm<sup>2</sup> consistent with previous study using stripPFA

aspect ratio = strip width/length

consistent

from Mark's presentation@Sendai (LDC00)



PandoraPFA v02-01

FullLDCTracking

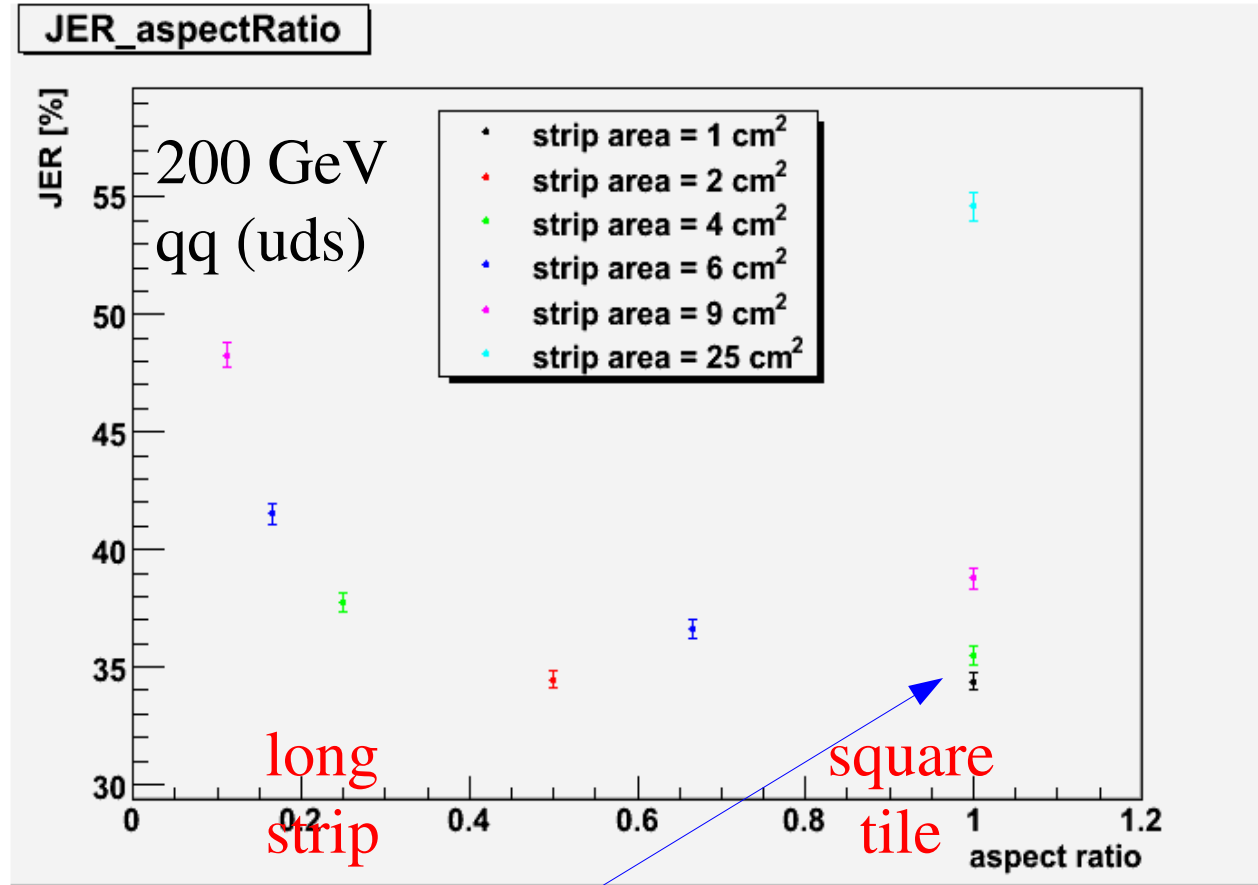
E <sub>JET</sub>	$\sigma_E/E = \alpha/\sqrt{E_{jj}}$  cosθ  < 0.7	$\sigma_E/E_j$
45 GeV	0.235	3.5 %
100 GeV	0.306	3.1 %
180 GeV	0.427	3.2 %
250 GeV	0.565	3.6 %

28.9 +/- 0.3

Uozumi-san PandoraPFA with 1x1 cells (GLDdec07)

EM/HAD have same strip size  
 some dependence on strip size  
 previous study using stripPFA

saw stronger dependence  
 (and worse energy resol > 45 %)



from Mark's presentation@Sendai (LDC00)



FullDCTracking

PandoraPFA v02-01

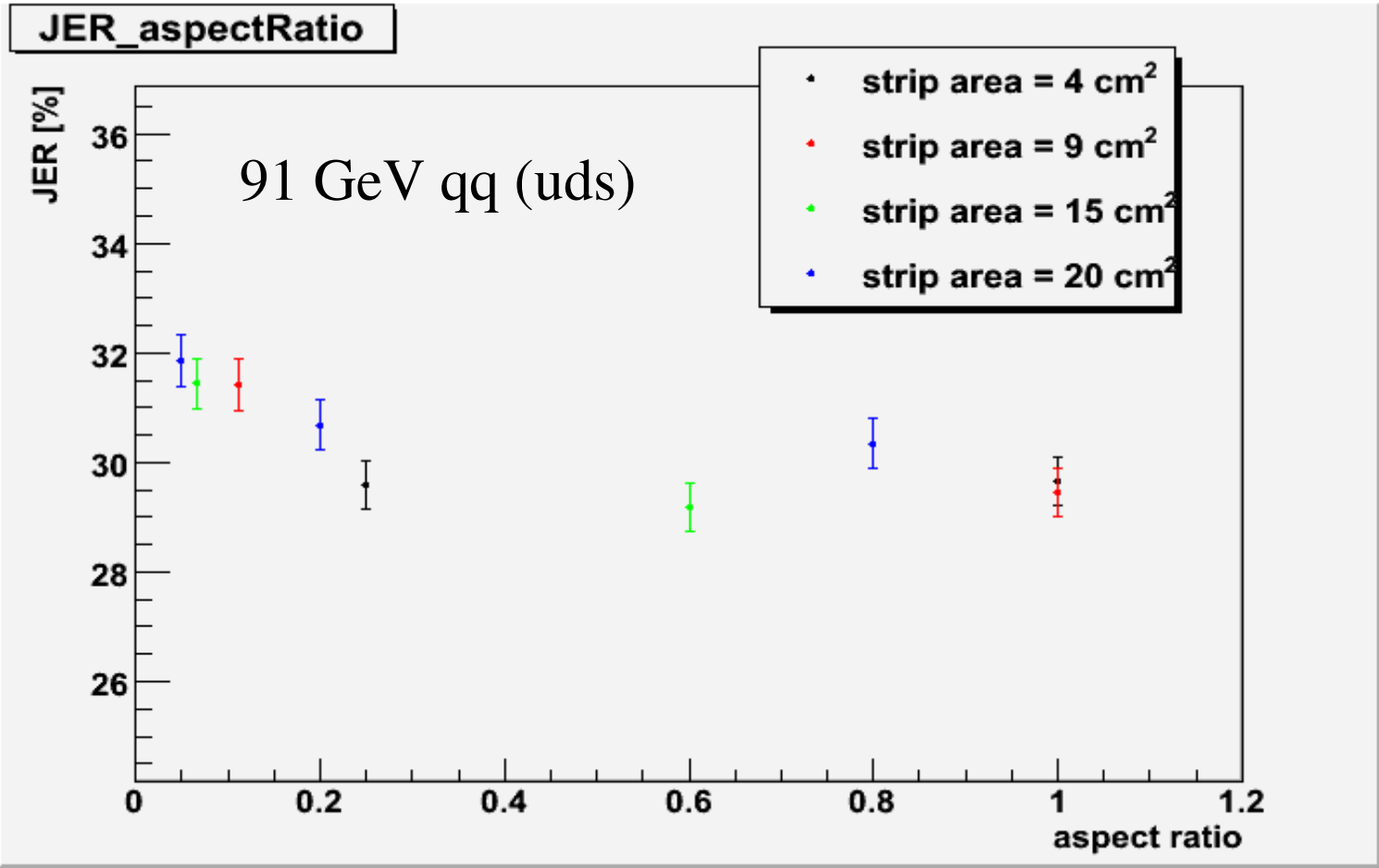
$E_{JET}$	$\sigma_E/E = \alpha/\sqrt{E_{jj}}$ $ \cos\theta  < 0.7$	$\sigma_E/E_j$
45 GeV	0.235	3.5 %
100 GeV	0.306	3.1 %
180 GeV	0.427	3.2 %
250 GeV	0.565	3.6 %

not so consistent...  
 effect of different geometry?

Need to check

Fix EM to 4x1 cm<sup>2</sup> vary only HAD segmentation

rather little dependence: plan to try wider range, and look @ 200 GeV



## summary

first version of strip + Pandora implemented  
further refinements possible

initial studies

- JER @ 91GeV consistent with Uozumi/Yoshioka
- @ 200GeV larger than Mark's result  
(effect of different geometry?)

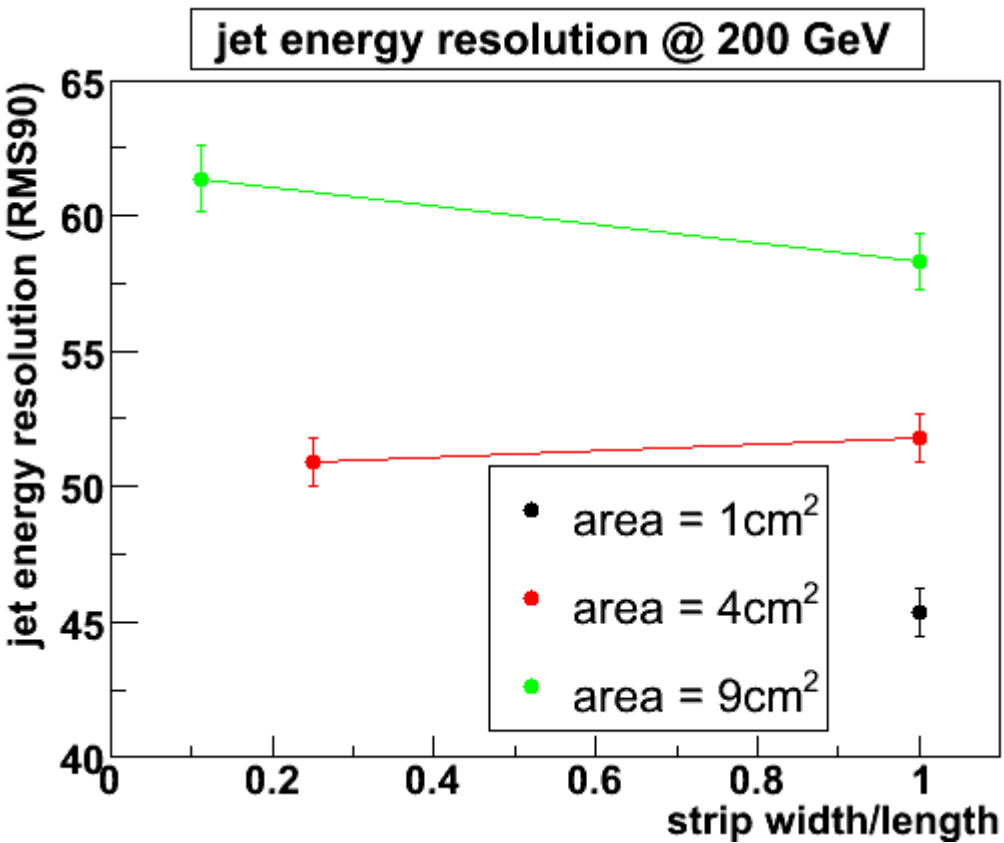
## plans

implement strip clustering in better way

detailed studies of different strip sizes/geometries

# stripclustering (not Pandora), 200 GeV

## vary EM&HAD



## vary only HAD

