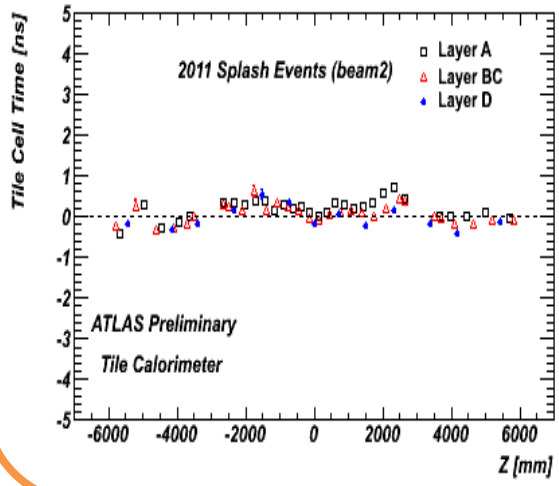
The ATLAS Tile Calorimeter performance at LHC

Splash events and cosmic muon data

Yesenia Hernández. IFIC-University of Valencia

TileCal cell timing in splash events

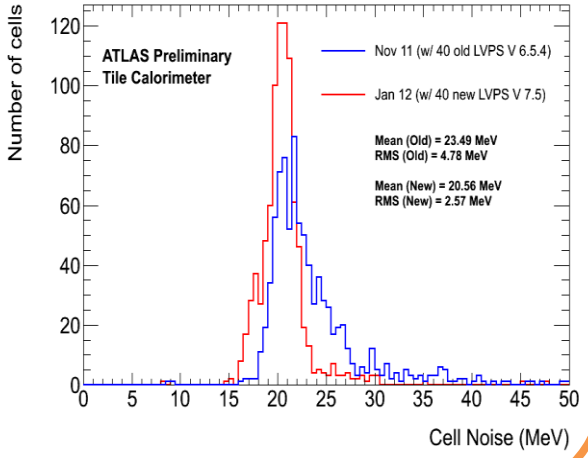


Cell synchronization against the cell z coordinate shows that for the 3 layers

All cells are synchronized within 1 ns

Noise improvement

Better noise performance + new LVPS reduce non-Gaussian tails and correlation among pairs of channels. (Red 2012 and blue 2011)

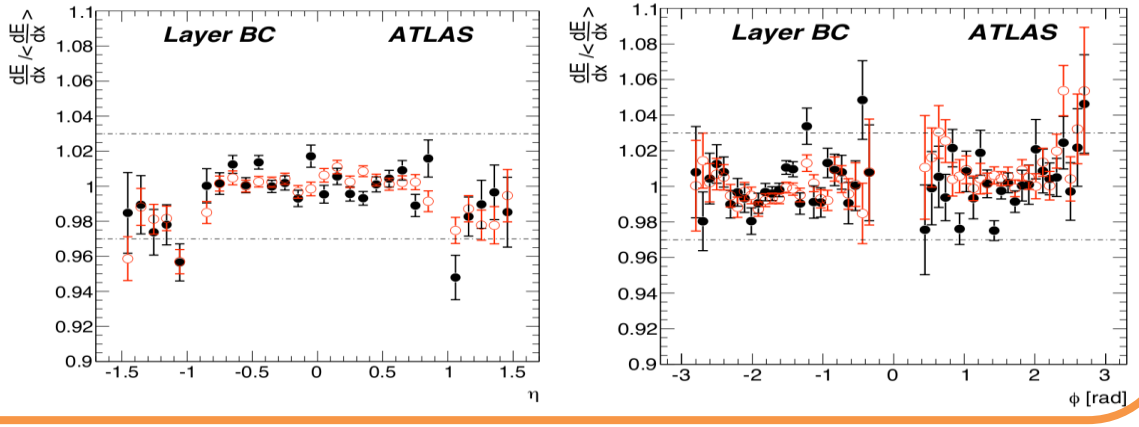


Cell energy uniformity

Cosmic muons are used to evaluate the EM scale calibration and uniformity across cells.

Signal is flat and uniform within 3%

Data (closed circles) well agreement with MC (open circles)

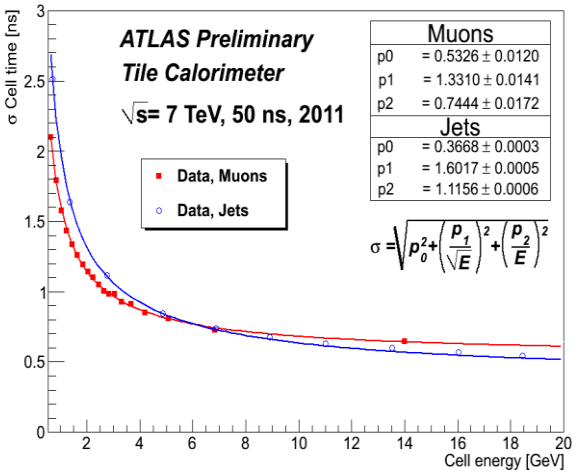


The ATLAS Tile Calorimeter performance at LHC

Performance in pp collisions

Yesenia Hernández. IFIC-University of Valencia

Time resolution



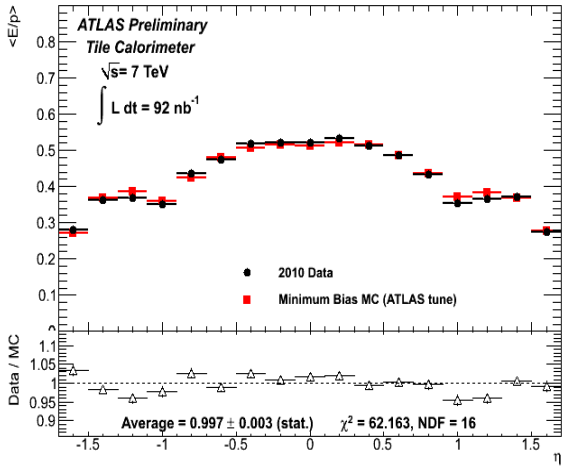
Cell time resolution against cell energy for muons (red) and jets (blue) → expected resolution of 0.5 ns for high energy depositions.

Resolution improves at higher energies and it is below 1 ns above 3 GeV

Response from single hadrons

Calorimeter response to single pions as a function of pseudorapidity.

Mean value of the ratio E/p show a data/MC agreement at the level of few percent



Luminosity monitoring

Current measured from the integrator can be used as a measurement of the luminosity: linear dependence. It can provide an absolute calibration at very low luminosity.