ATLAS Tile Calorimeter Test Beam Plans

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for the ATLAS Tile Group

H8 User meeting 8 April 22

Tile Test Beam

- motivations:
  - Test the readout electronics for the HL-LHC -mostly final design:
    - Particle response, EM linearity and resolution, noise, pulse shaping, etc.
  - Improve performances of the current detector:
    - studies of layers EM inter calibration with muons fine scans + electrons
    - hadronic response and shower shapes
- Two Periods:
  - June 22-July6: key for testing of PRE-PRODUCTION FENICS cards in view of the Production Readiness Review
  - November 2-14: toward the test of a “complete vertical slice”

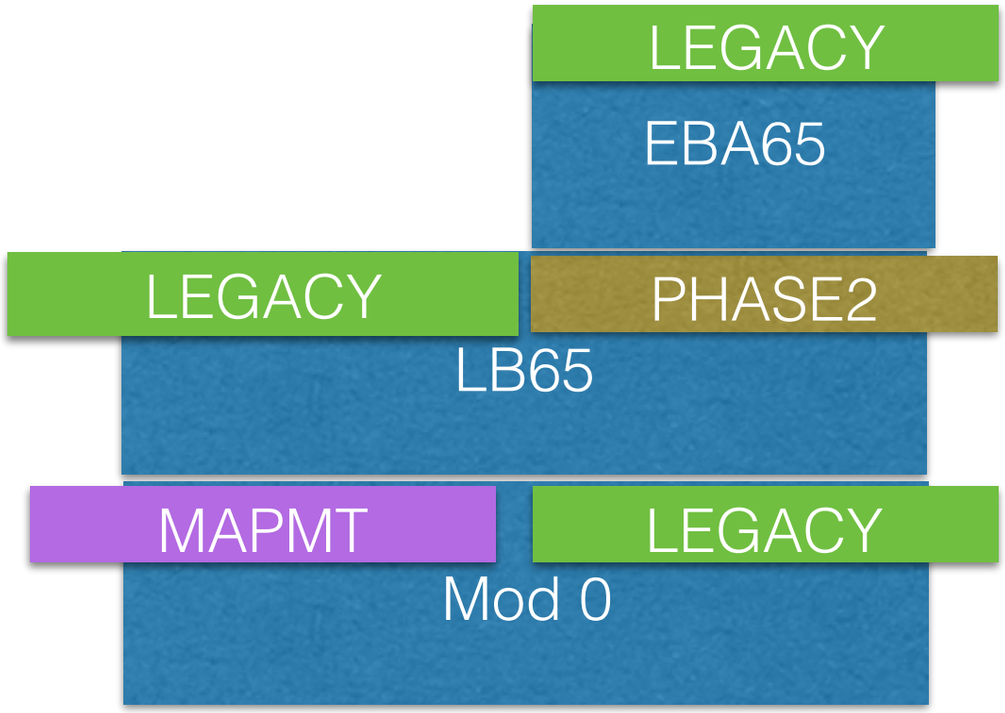
Setup in H8-158

Setup in H8-158

- positioning table with modules M0, LB65, EBA65 in the area. Already instrumented with 5 electronics drawers from TB2021 and ~functional.

- need access to mount latest version of FE on phase-2 drawer

    - schedule being finalised, in case of interference with CMS/MDT around half June, possibly move table to garage position.



beams & studies

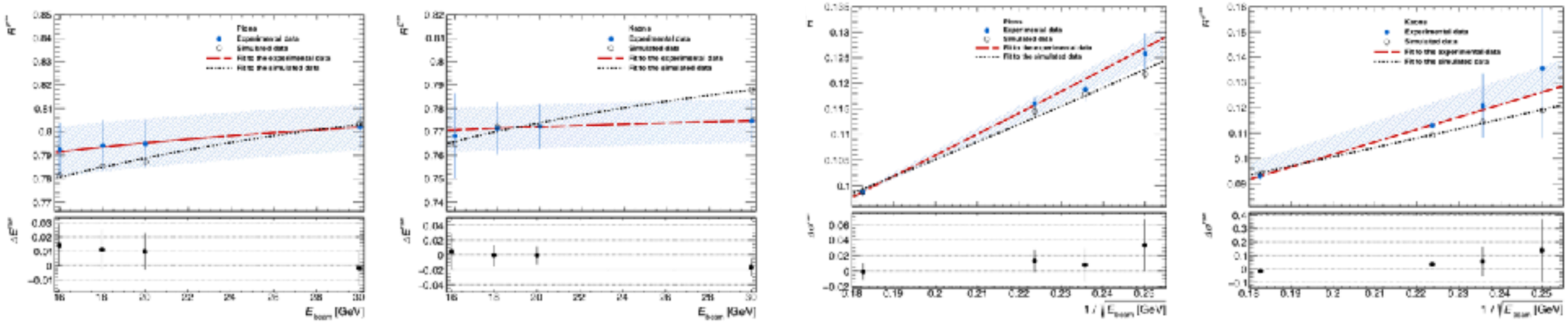
- beams setup requests similar to last year:
  - electrons: 20/50/100 GeV
  - muons:150 GeV
  - hadrons: 5-115 GeV

Studies	Config.	Goal	Setup
Electron linearity/resolution	@20/90	Upgrade	1mod
Particle response e/mu/h	@proj	Upgrade	1 mod
Hadrons response and shape	@proj/90	JES/ GEANT	3mod

beams & studies

- beam line setup like last year:
  - 3 Cherenkov
  - trigger scintillators, Wire Chambers
  - improve hadrons separation with TOF measurements (100 o/a 200m baseline, cables being routed from 128/138)
  - vacuum chambers for electrons.
  - Wire chamber downstream the Morpurgo.
    - user operated, status ~always a bit problematic.

few examples of results from previous campaigns



(a) (b) (a) (b)

protons/pions/kaons response/resolution
paper submitted to EPJC:
https://arxiv.org/pdf/2102.04088.pdf

Thanks in advance to All personnel of the accelerators and North Area that make always the TB experience pleasant, important and worthwhile, particularly for the young colleagues