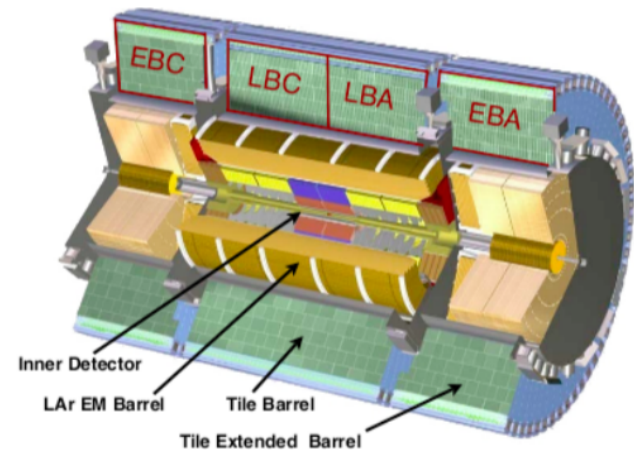
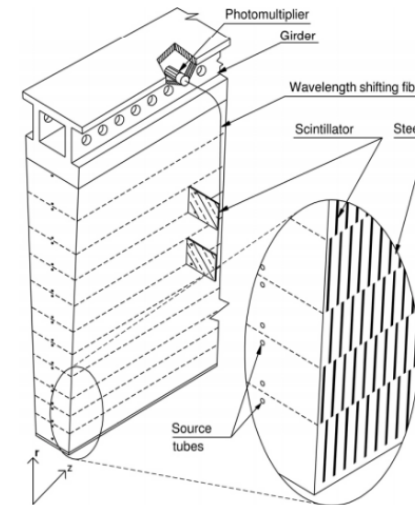


Robustness studies of the photomultipliers reading out TileCal, the central hadron calorimeter of the ATLAS experiment

Giulia Di Gregorio (University & INFN of Pisa)

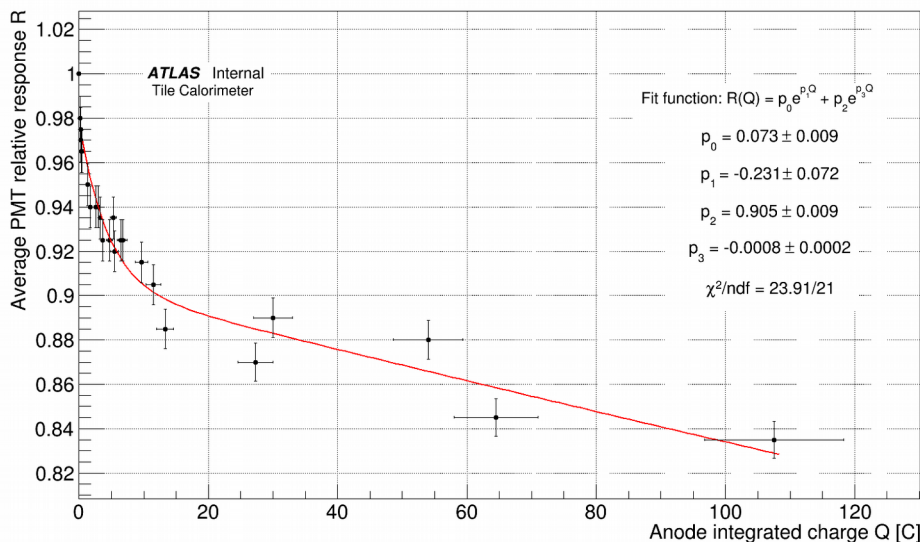


- TileCal is the central section of the hadronic calorimeter in the ATLAS detector.
- It is a sampling calorimeter (steel and scintillating tiles).
- Light produced by the passage of charged particle is transmitted to PMTs by WLS fibers.



- TileCal is readout by 10k PMTs.
- The PMTs response is monitored every 2-3 days with the TileCal laser calibration system.
- Time stability of the PMT response was studied since LHC Run 1.

Average TileCal PMT relative response as a function of the integrated anode charge



- PMT response loss is dominated by the amount of integrated anode charge.
- A double exponential function is used to describe the PMT response evolution and to estimate the response loss until the end of HL-LHC period (up to 600 C integrated charge).
- Larger amounts of anode charge were integrated from a small PMT sample on a test bench. Same model is applied and results are in agreement with those from on-detector PMTs.