

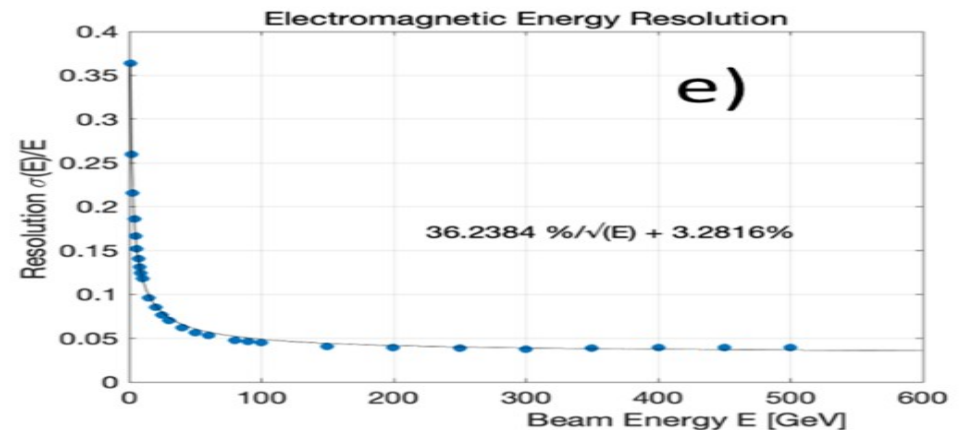
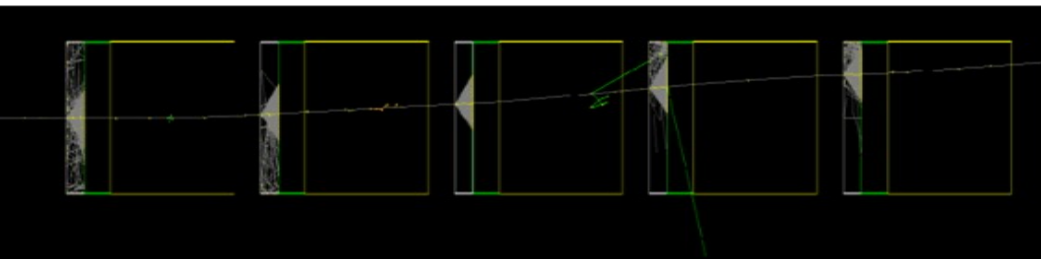
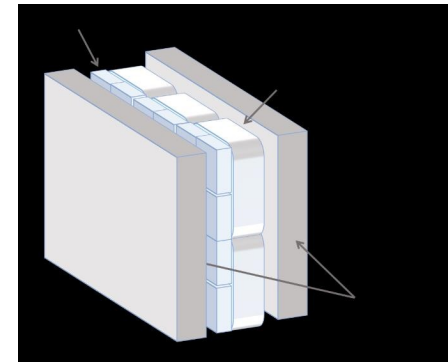



CMS HF wall

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The very forward region of pp scattering at LHC is difficult to instrument, due to large multiplicity of particles with very high energy spectrum, at small angles with respect to the circulating beams and a resulting severe radiation load. Typical particle fluxes of $10^7 - 10^8 \text{ cm}^{-2} \text{ s}^{-1}$, average energy deposit of 750 GeV per module, and angles of few (10) mrad. Over a 10 years period the integrated radiation dose may reach several Grads

Detectors based on quartz radiators coupled to fast PMT are particularly well adapted to the above requirements, because quartz (fused silica, SiO_2) display reduced radiation damage [3] in a wavelength interval ($\approx 300\text{-}500\text{nm}$) where quantum efficiency (QE) of many modern PMTs is large ($\approx 40\%$).





a fast high-resolution preshower module would be well adapted to the conditions of the HL-LHC regime, either in association with HF, or further downstream, giving a handle on pileup, and sampling the forward energy flow, helping in reducing residual biases in MET distribution, maybe with the possibility of identifying anomalies eventually associated with “delayed objects” in the forward region

Beam request:

- Spectrum of electrons 30 up to 90 or 120 GeV high purity – less than 2% hadron contamination
- Spectrum of Pions 20 – 150 GeV
- Muons



Infrastructure

- HCAL DAQ
- A moving table
- HV for PMT's