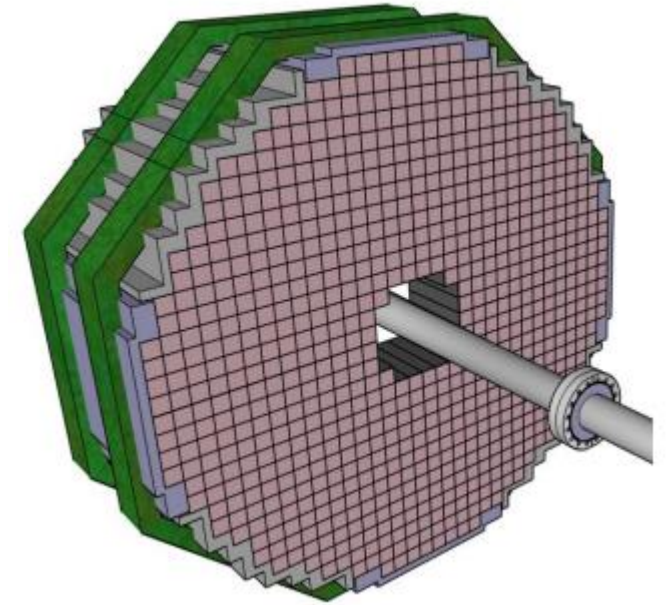


Detector 1 Calorimeter Readout Plans

A very coarse and subjective overview

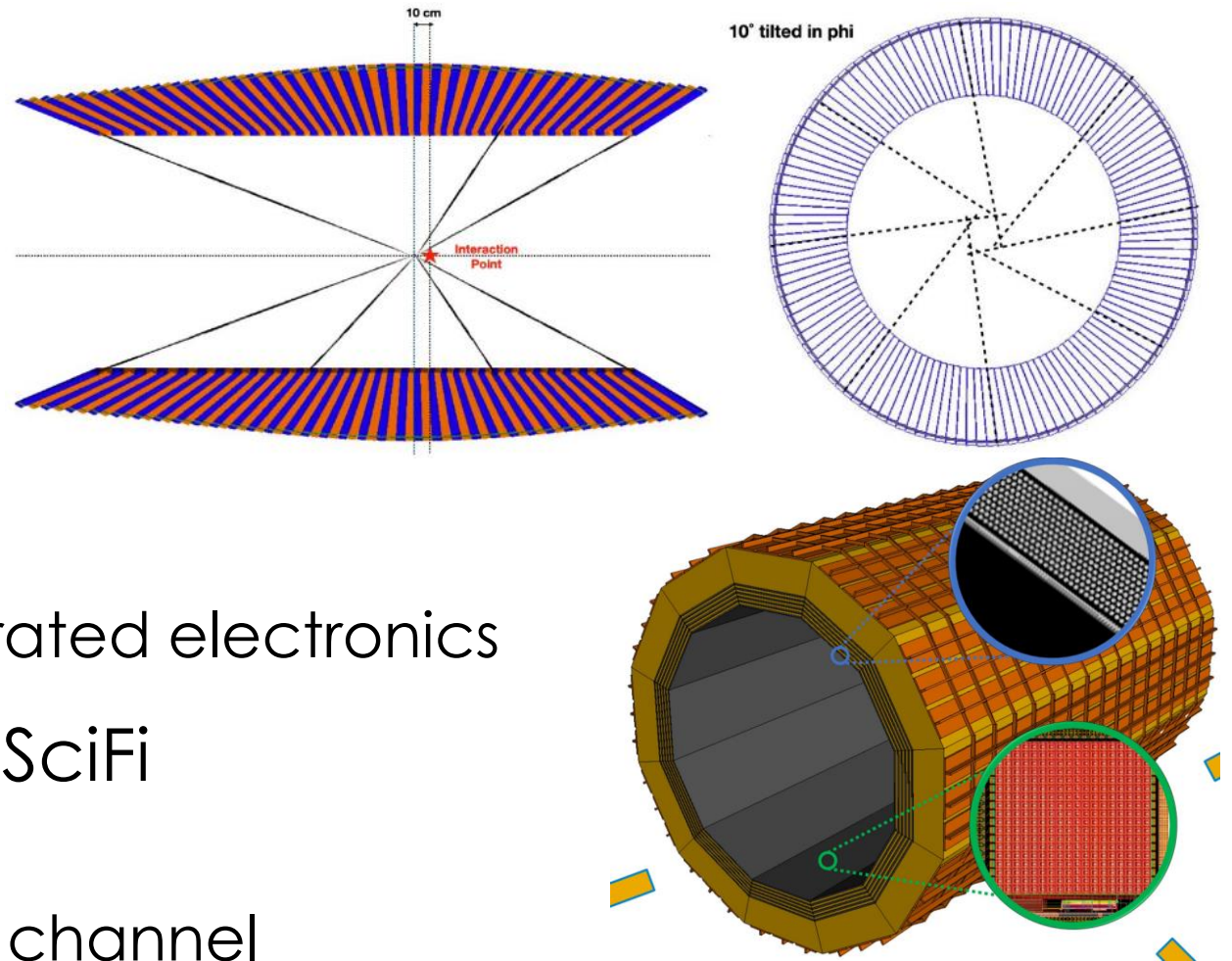
Backward Calorimeters

- ECAL: ~3k PbWO(+SciGlass?) Crystals
- SiPM Readout
 - Analog sum of up to 16 SiPMs per crystal
- Electronics can be off detector in principle
- Backward HCAL: unclear if needed.



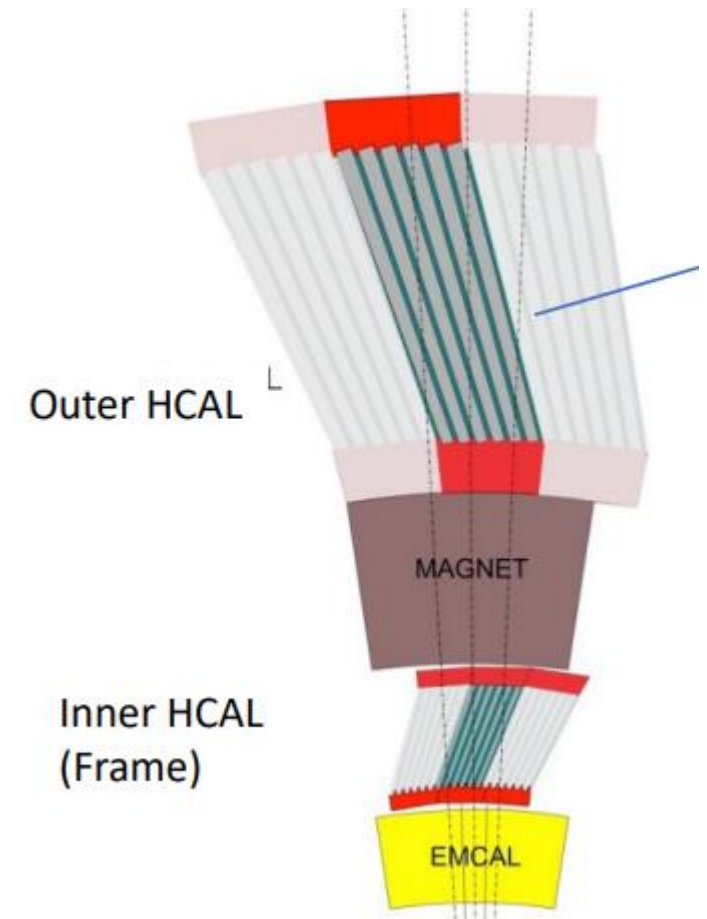
Barrel ECALs

- “ECCE style”: SciGlass
 - SiPM (APD?, PMT?) readout
 - ~8k channels
 - Some space available for integrated electronics
- “ATHENA style”: AstroPix + Pb/SciFi
 - ~10k SiPM channels
 - AstroPix: low power MAPS ~50M channel
 - Two-level data aggregation inside detector, one data link per stave



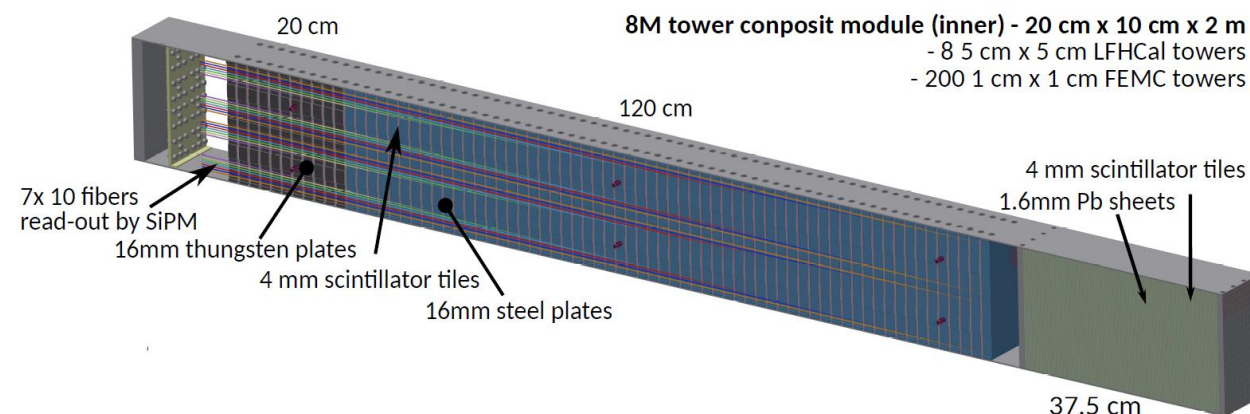
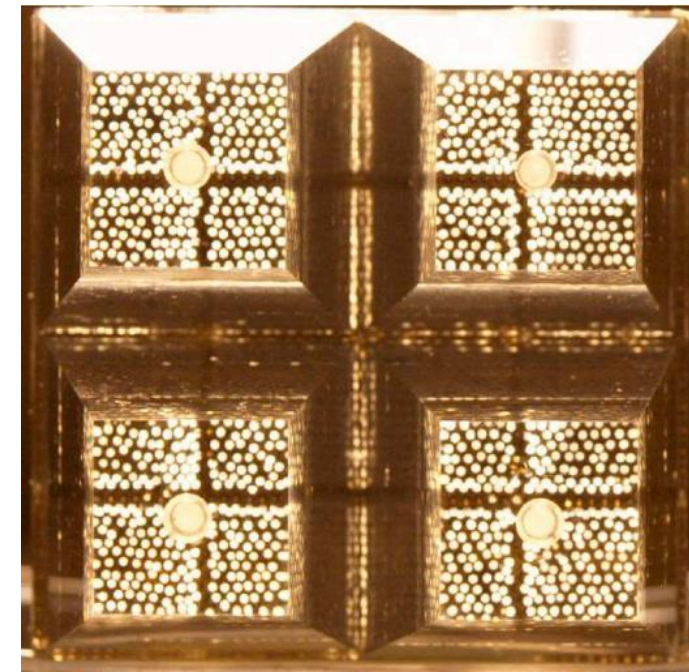
Barrel HCALs

- “ECCE style”: sPhenix HCAL
 - Up to ~3k SiPM channels
 - sPhenix off-detector electronics exist
 - Fixed geometry, no space for integrated readout
- “ATHENA style”: STAR HCAL
 - SiPMs (how many?), off-detector electronics



Forward Calorimeters

- “ATHENA style” pECAL:
 - 25k channels of 4 summed SiPMs
 - Can use off-detector
- “ECCE style” FHCAL:
 - Up to 60k channels of SiPMs
 - Tentatively plan to use HGCR0Cs (collaboration with ALICE FOCAL R&D) at end of each tower
- High granularity HCAL inset:
 - ~8k channels of SiPMs



Summary

- It's SiPMs everywhere. Some variation in dynamic range expected, but in the end it's all very similar...
 - No real strong plans on SiPM electronics yet, space/power requirements do strictly defined so far
 - Forward calos have much higher channel counts
- Single, unified readout scheme for all calorimetry would be very beneficial
 - At least for integrated forward calo readouts, but that is already under discussion
- HGCR0C is the CMS SiPM chip, but very 40MHz dependent
 - Streaming readout compatible?