

A HCAL for SiD

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General HCAL Parameters

Barrel

Inner Radius: 1420 mm

Outer Radius: 2370 mm

Length in Z: ± 2780 mm

Absorber Thickness: 20 mm

Gap Thickness: <8 mm

EndCap

Inner Radius: 200 mm

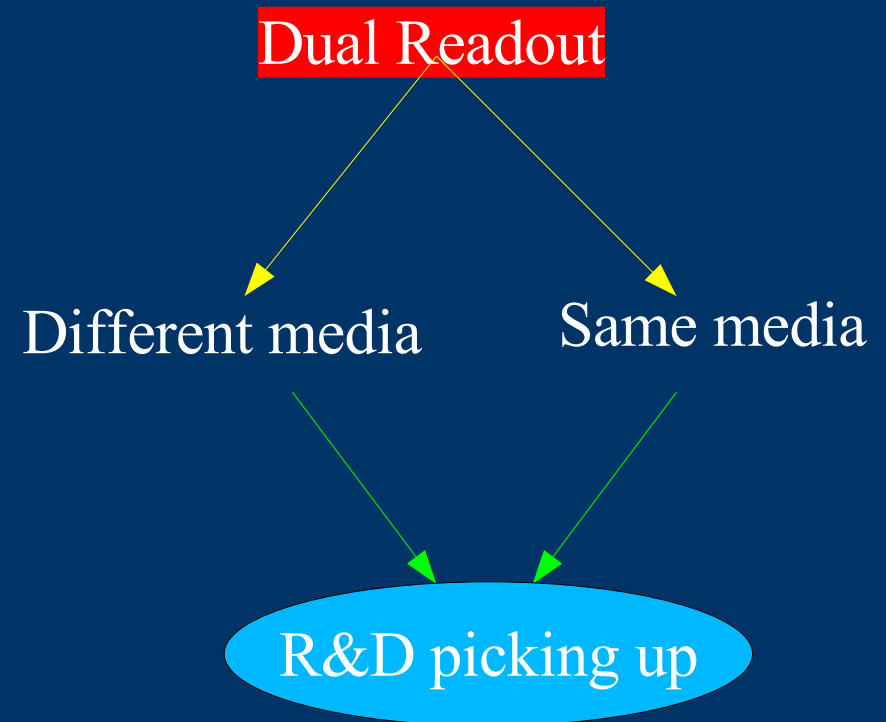
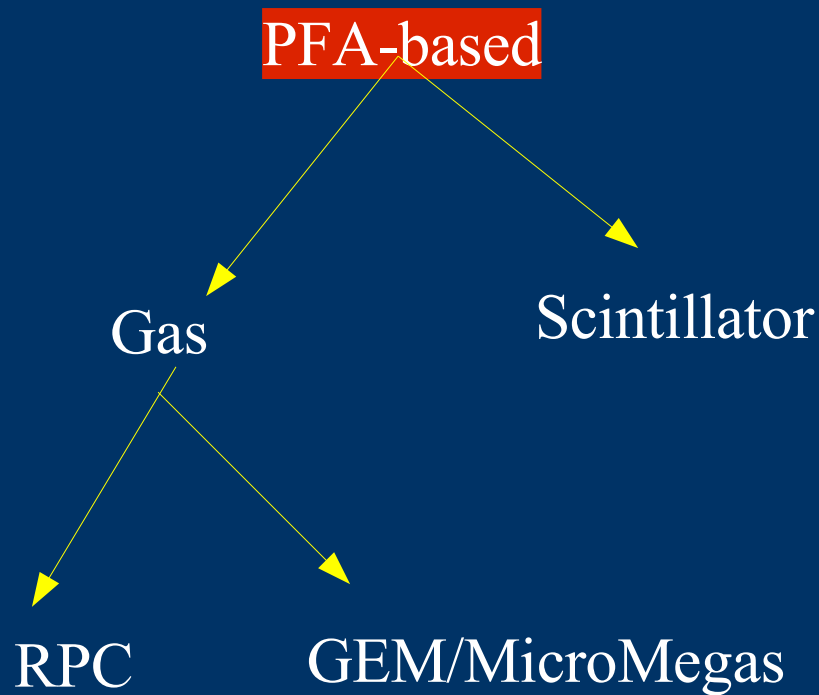
Outer Radius: 1410 mm

Length in Z: ± 1820 mm to 2780mm

Absorber Thickness: 20 mm

Gap thickness: <8 mm

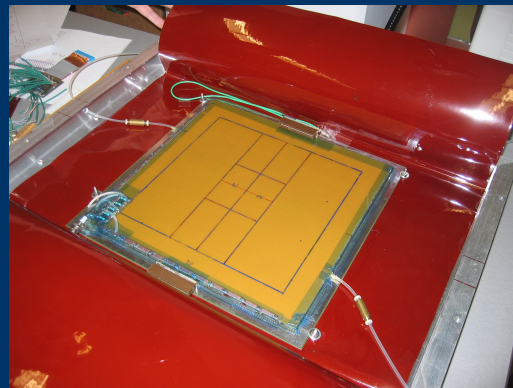
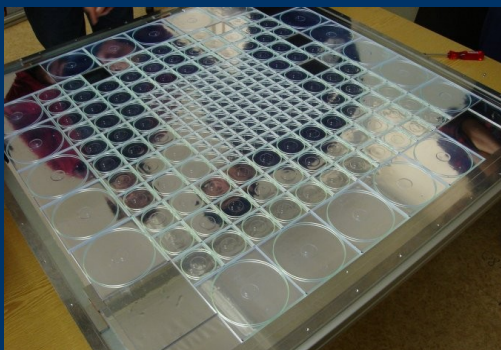
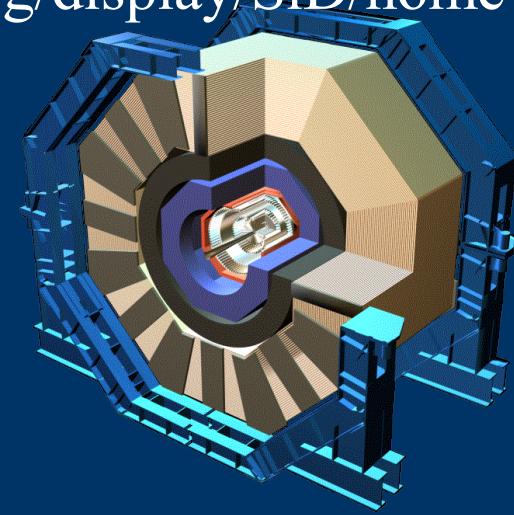
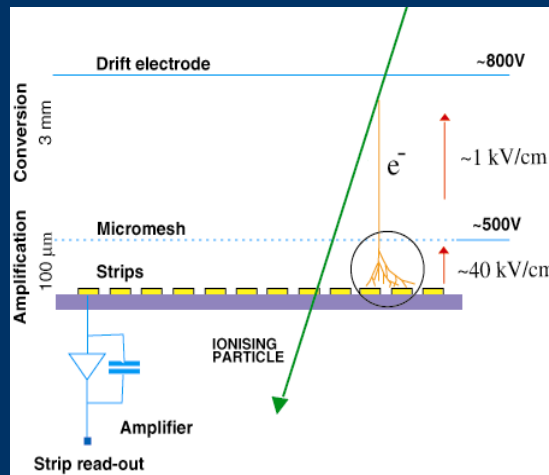
SiD HCAL Tree



Far reaching implications
on detector design

HCAL Technology Options

<http://silicondetector.org/display/SiD/home>



A vigorous, largely concept independent R&D program

Lol

- Performance measures for a given set of general parameters with a more-or-less specific detector sub-system mix
 - The hardware R&D is not going to clearly point to a specific detector configuration
 - The answer will need to come from simulation with some reality added to it from hardware prototyping
 - Not the detector you are necessarily going to construct
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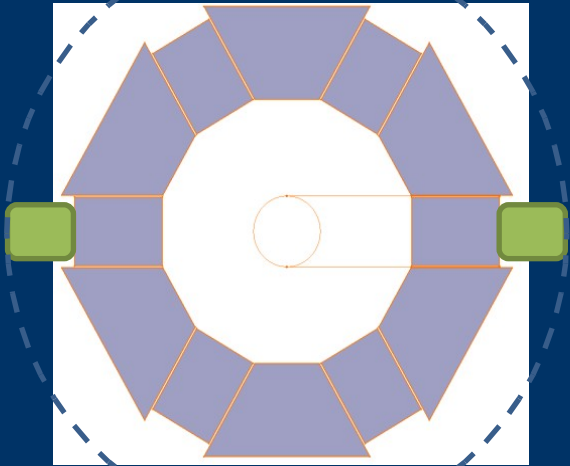
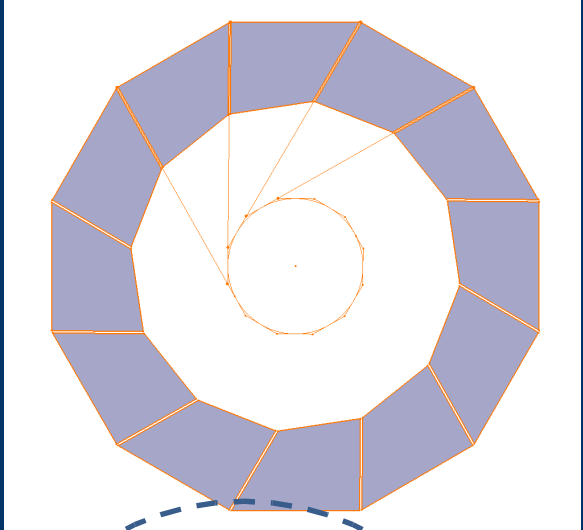
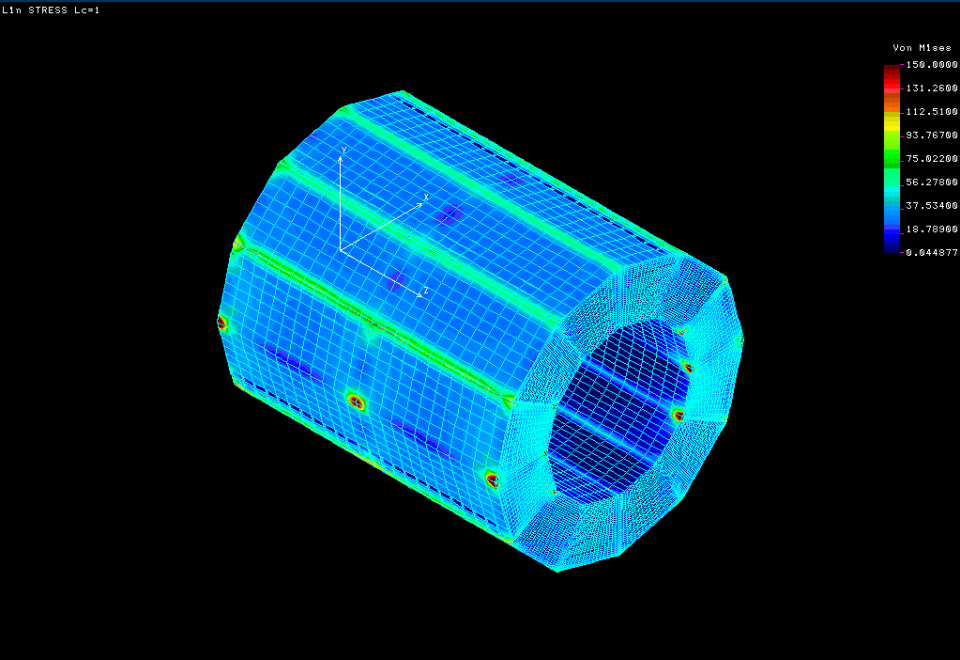
For the HCAL.....

- Given a set of boundary conditions:
 - fixed inner radius of coil
 - W too expensive
 - What is the transverse and longitudinal segmentation required?
 - What is the active media?
 - Baselining these does not necessarily need a full blown PFA analysis
 - That would be the next step....
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This would amount to...

- Energy reconstruction of two particle events in gas and scintillator as a function of transverse and longitudinal segmentation
 - Once these rudimentary parameters are put in detailed PFA studies to derive the final performance measures could proceed in real earnest
 - Maybe this has already been done??
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SiD HCAL Engineering



Geffroy, Guarino, Krempez