cdcaug05

This is the baseline for the Compact Detector Concept modelled as of July 31, 2005, to be used for detector studies at Snowmass.
This version uses the same tracker as the Silicon Detector see sidaug05. The calorimetry has been modified to make the overall design more compact. The compact description of this detector in xml format can be found at http://www.lcsim.org/detectors/cdcaug05.zip.
What follows is a plain text description of the file compact.xml found in this zip file.

Calorimeters:

Electromagnetic Calorimeter:

The inner radius for the barrel is 127cm. The aspect ratio is set to cos(theta)=0.8, meaning the inner z of the endcap EM calorimeter is at z of 168cm.

The EM calorimeter is a Tungsten/Silicon sampling calorimeter.
It is composed of 20 layers of

material	thickness
Tungsten	.250cm
G10	.068cm
Silicon	.032cm
Air	.025cm

followed by 10 layers of

material	thickness
Tungsten	.50cm
G10	.068cm
Silicon	.032cm
Air	.025cm

The endcap plug sits inside the barrel cylinder, so the barrel z extent is +/- 182.0cm.
The endcap starts at an inner radius of 26cm and extends out to 126.5cm.

Hadron calorimeter:

The hadron calorimeter is a Tungsten/Scintillator sampling calorimeter.
It is composed of 50 layers of

material	thickness
Tungsten	0.75cm
Polystyrene	0.50cm
G10	0.25cm

It begins immediately outside of the EM calorimeters, with the endcap plug sitting inside the barrel.

The barrel inner radius is 141.0 with a z extent of +/- 257cm.
The endcap extends from an inner radius of 26.0 cm to an outer radius of 140.75, inner z of 182.0

Solenoid:

The solenoid is modelled as a cylinder with an inner radius of 230cm. This is larger than the outer radius of the hadron calorimeter since we will not be building a cylindrical detector, but a polygonal one (current thinking is octagonal). The barrel composition is as follows:

material	thickness	z
Steel	6.0cm	271.0cm
Air	8.5cm	271.0cm
Aluminum	39.3cm	262.5cm
Steel	6.0cm	262.5cm
Air	20.0cm	271.0cm
Steel	3.0cm	271.0cm

This is capped with disk endplates of 6cm steel from r=250cm to 312.8cm

Muon System:

The muon system is implemented as a Steel/RPC sampling calorimeter,
where the solenoidal flux return is instrumented.
It is composed of 48 layers of:

material	thickness
Iron	5.0cm
G10	0.3cm
PyrexGlass	0.11cm
RPCGas	0.12cm
PyrexGlass	0.11cm
Air	0.86cm

The barrel inner radius is 320.0cm with z extent of +/- 257cm.
The endcap sits outside the barrel at an inner z of 257.5cm and radius from 26.0cm to 632.0cm

The field is solenoidal, constant 5 Tesla along z up to half the coil thickness and -0.6 outside.