

1. Summary of the TPC inner radius

inner radius	sensitive volume	physical volume	difference
LDC'	30.05	37.1	7.05
GLD'	37.1	43.0	5.9

> From: Akiya Miyamoto <akiya.miyamoto@kek.jp>
> Reply-To: <ild-detector-optimisation@desy.de>
> Date: Thu, 31 Jan 2008 17:23:58 +0900
> To: <ild-detector-optimisation@desy.de>
> Cc: Marcel Vos <marcel.vos@ific.uv.es>
> Subject: Re: [ild-detector-optimisation] TPC inner radius

Dear All,

The TPC geometry of GLDPrim and LDCPrim are compared in the excel file sent by Jeminy last December.

According the file,
the inner radius of the TPC region in GLDPrim is 39.5cm,
and that of LDCPrim is 30.05cm.

On the otherhand, the inner radius of the TPC sensitive volume of GLDPrim is 43.0 cm, while that of LDCPrim is 37.1cm.

So, there are some difference, but the difference of the inner radius of the sensitive volume is not large as you may imagine.

The thickness of the TPC inner wall of GLDPrim is different from LDCPrim, that increased the difference of the inner radius of TPC region between GLDPrim and LDCPrim.

regards, Akiya

2. TPC endcap materials : Suggested new list by Ron Settles

dz (mm)	material	% X_0
0.003	copper	0.02 gating
0.03	kapton	0.01
0.003	copper	0.02
1.964	TPC_gas	0.02
0.003	copper	0.02 mpgd
0.03	kapton	0.01
0.003	copper	0.02
1.964	TPC_gas	0.02
0.003	copper	0.02 mpgd
0.03	kapton	0.01
0.003	copper	0.02
3.964	TPC_gas	0.04
0.05	copper	0.35 pads
2	g10	1.03
0.5	silicon_2.33gccm	0.53 roelectr
2	epoxy,etc	1.86
1	kapton	0.35
**2	aluminium	2.24 cooling
1	kapton	0.35
**3	carbonfibre	1.59 stiffness
80.45	Air(0.85)+G10(0.15)	0.02 air +6.22 g10 roelectr
summa (Ron's new)		
100mm		14.78 %X_0
summa (mokka old)		
100mm Endplate		28.3% X_0

Dear Steve and everybody,

As everybody knows, this breakdown is on educated guess since we are still in the process of designing the endplate.

I have studied your list (this is the first time I saw it) and revised it in such a way so that there are as few changes as possible. The changed the two places marked by **. I kept the dz(mm) the same everywhere, and replaced 2mm copper for "cooling (my interpretation)" by 2mm aluminium and replaced 3mm aluminium for "stiffness" by 3mm carbonfibre.

Note that GLD and LDC have different overall thicknesses of the endcap, but, to make them agree, this can be changed rather easily below by simply changing the thickness of the air in the last line. Let me know what you think... Cheers, Ron

>On Thu, 31 Jan 2008, Steve Aplin wrote:

> Dear All,

> following yesterdays discussion here is a breakdown of the TPC
> endplate description in Mokka.

> In the Mokka detector models LDC01_05Sc and LDCPrime_01sc, i.e. those
> using the tpc08 driver, the total TPC Endplate material corresponds to
> 28.3% of a radiation length. This of course is considerably larger
> than the 15% specified by Ron.

> The material within the endplate is implemented in layers as follows:

> dz (mm)	material
> 0.003	copper
> 0.03	kapton
> 0.003	copper
> 1.964	TDR_gas
> 0.003	copper
> 0.03	kapton
> 0.003	copper
> 1.964	TDR_gas
> 0.003	copper
> 0.03	kapton
> 0.003	copper
> 3.964	TDR_gas
> 0.05	copper
> 2	g10
> 0.5	silicon_2.33gccm
> 2	epoxy
> 1	kapton
> 2	copper
> 1	kapton
> 3	aluminium
> 80.45	Air(0.85) + G10(0.15) Mix
> 100mm Endplate	28.3% X_0
> So the question to Ron and Friends is how do you want your 0.15 X_0	
> distributed?	Cheers, Steve.