

# 1 Testbeam Z-Positions

The z-position of beam-counters and material in our testbeam-setup is commonly given as the distance from the front face of the cryostat to the center of the beam-counter or material (unless otherwise specified). I have compiled a list of elements and their positions based on information given to me by Peter Schacht and Naoko (who got it from...?) and what I found in Pavol's G4 code and drawings I copied from logbooks during the testbeam.

I will try to elaborate on the source of some additional information:

According to the MPI drawing of the cryostat for the combined testbeam, the inner diameter (radius) of the cryostat cold vessel is 250 (125) cm (see: <http://particle.phys.uvic.ca/web-atlas/atlas/hec-emec/geometry/>). The G4 code specifies the total thickness of the entire cryostat wall, warm and cold, to be 20cm, putting the radius of the outer wall at 145 cm. The HEC NIM paper gives a thickness of the beam window of 0.55 mm. There is a drawing made in 1994 in one of the folders in the beam-hut. I copied this drawing during a shift (by hand) and included it with some annotations in this note on page 3. In this drawing are a number of things that have likely not moved during the past 10 years, like the thick iron wall, the Halo-wall and the Pb wall. It is also very unlikely that the cryostat has gotten modified, so I assume that the 10cm given as the cryostat window indicates the thickness of the real cryostat wall, and that the dimension given as 16 cm indicates the location of the beam window in that wall. This puts the beam window at a radius of  $145-16=129$ cm from the center of the cryostat. (Incidentally, the G4 code sports a 'warm radius' of 129.55cm.)

So, all the given z-positions are distances to the beam-window at 129cm.

There is some discrepancy between distances that were quoted by different sources. For the elements that are likely to move around from one beam period to another, I have taken the one that I consider the most reliable recent source (bold face), while for the elements that don't move I try to figure out the source of the discrepancy and make a guess.

Table of z-positions in cm (as measured starting from the front face of the cryostat) and the sources for that position. For some elements, their size is given in brackets (X x Y x Z). I took the size of F1,F2, MWPCs from the G4 code, but I think the X,Y for F1,F2 might just be their overlap area. The size of W1,W2,B1 is the one that was given on a drawing in a folder in the beam-hut. The numbers that I think are most reliable are in bold face.:

Element	1994 drawing	Peter	Naoko	G4
Iron	(16+7)-63	7-47		
Halo wall (VM)	64.5	62.5		
Pb wall	106.5	104.5		
F1 (1cm x 1cm x 1cm)	130	<b>160</b>		
F2 (1cm x 1cm x 1cm)	142.4	<b>147.4</b>		
MWPC2 (12.8cm x 12.8cm x 3.3 cm)	178		<b>178.5</b>	
MWPC3 (12.8cm x 12.8cm x 3.3 cm)	276.5		<b>277.5</b>	
MMPC4 (12.8cm x 12.8cm x 3.3 cm)	350.5		<b>349.5</b>	
Iron beam dump	396-556(?)	397-718.5		
MWPC5 (12.8cm x 12.8cm x 3.3 cm)		3090	<b>3091.5</b>	
W2 (15cm x 15cm x 1cm)		3118		
B1 (3cm x 3cm x 1cm)		3132		
W1 (15cm x 15cm x 1cm)		3135		

Dimensions of the cryostat - inner and outer radius and position of the beam window measured from the centre of the cryostat:

	G4	other
R inner cryostat	125.5	125
R outer cryostat		145
beam window		129

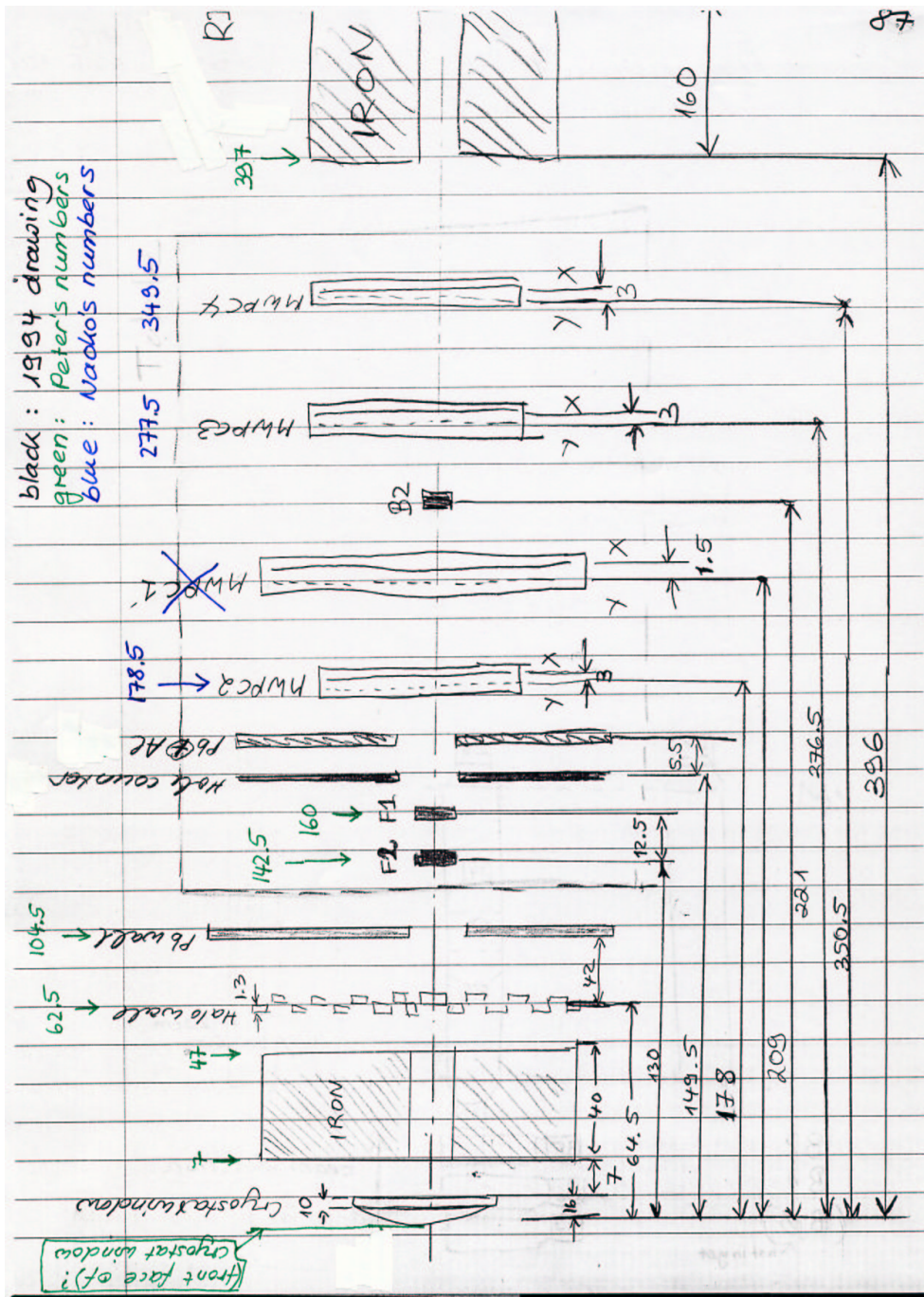


Figure 1: A copy of the drawing found in a folder in the beam-hut. I annotated it with some more up to date numbers. NOTE: Several of the elements in this drawing were NOT present in the 2002 testbeam!