Dimension specifications of the mask plate and anode wires of the Scanning Sky Monitor camera

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Abstract

The specifications of the dimensions prescribed for the six mask patterns and the anode-wires of the Scanning Sky Monitor (SSM) cameras are described in this document.

The origin (x,y,z = 0.000,0.000,0.000) is assumed to be at the center of the detector plane as shown in figure 1. The figure also shows the X, Y and Z axes with the arrows pointing in the positive direction.

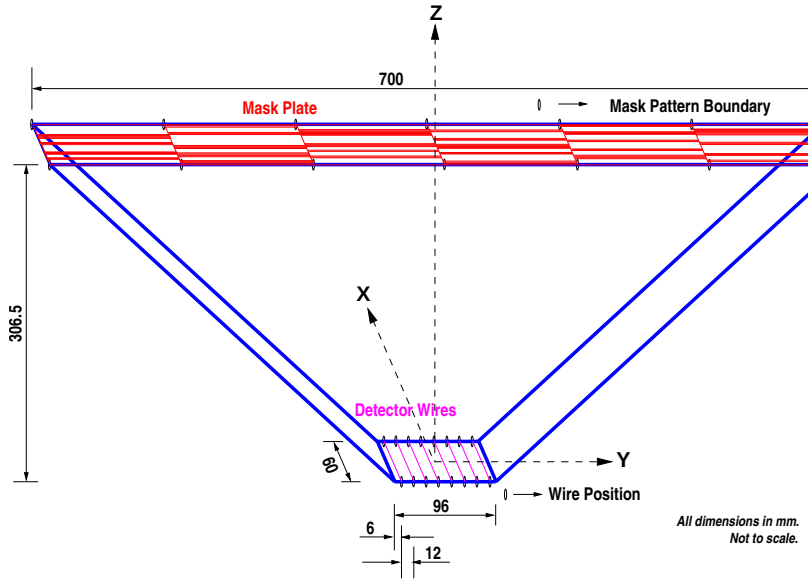

Figure 1. SSM camera.

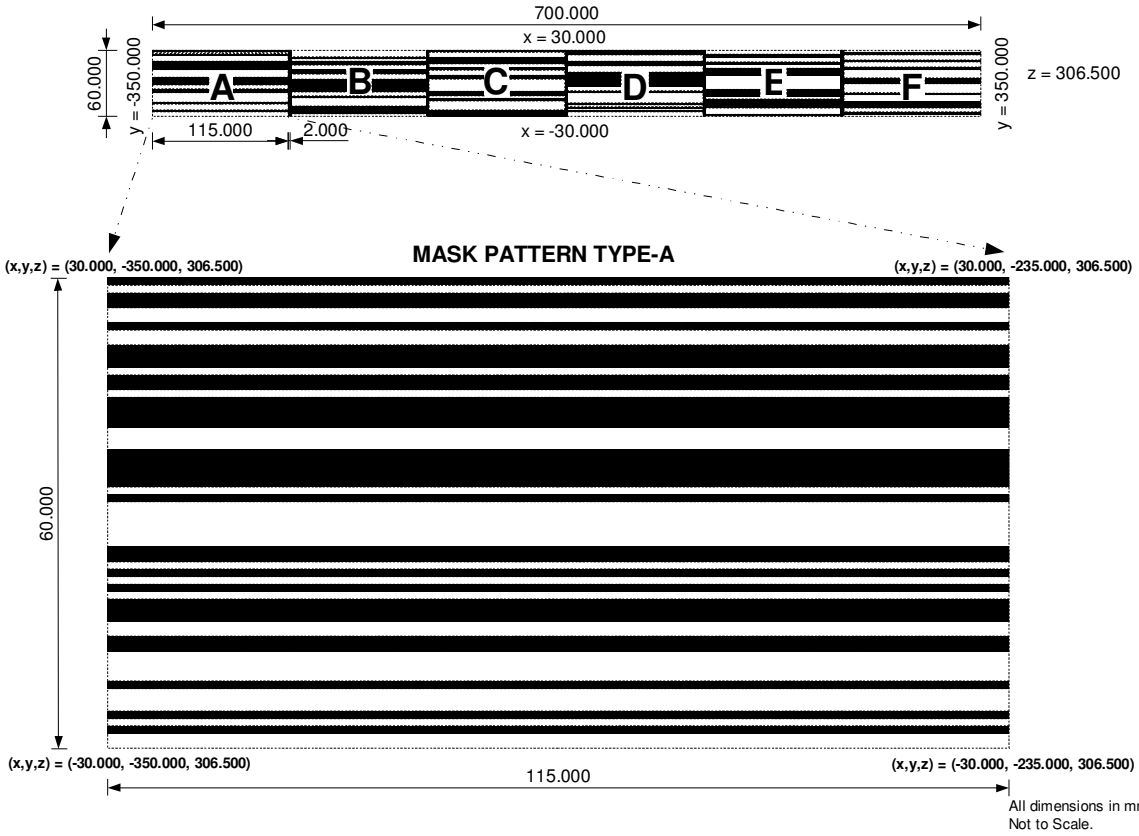

Figure2. Mask Plate

The mask plate is at z = 306.500 and figure 2 shows the mask plate with six mask patterns: A, B, C, D, E and F, with the inter pattern separation of 2.000 mm. The length and the width of the mask plate are 700.000 mm and 60.000 mm respectively.

The mask pattern type A is shown in figure 2 with the x,y,z coordinates of its four corners. Table 1 lists the dimensions along the x,y,z coordinates for the six mask patterns and the tolerance values.

Mask Pattern A		**Mask Pattern B**		**Mask Pattern C**		**Mask Pattern D**		**Mask Pattern E**		**Mask Pattern F**	
Z = 300.000											
Start (Y)= -350.000 End (Y)= -235.000		Start (Y)= -233.000 End (Y) = -188.000		Start (Y)= -116.000 End (Y) = -1.000		Start (Y) = 1.000 End (Y) = 116.000		Start (Y) = 118.000 End (Y) = 233.000		Start (Y) = 235.000 End (Y) = 350.000	
Slit Start (X)	Slit End (X)	Slit Start (X)	Slit End (X)	Slit Start (X)	Slit End (X)	Slit Start (X)	Slit End (X)	Slit Start (X)	Slit End (X)	Slit Start (X)	Slit End (X)
-30.000	-28.095	-28.095	-27.143	-29.048	-28.095	-30.000	-29.048	-28.095	-27.143	-30.000	-28.095
-27.143	-26.190	-26.190	-25.238	-25.238	-23.333	-27.143	-26.190	-26.190	-22.381	-27.143	-26.190
-25.238	-22.381	-24.286	-23.333	-21.429	-17.619	-24.286	-23.333	-20.476	-19.524	-25.238	-24.286
-21.429	-17.619	-21.429	-20.476	-16.667	-13.810	-22.381	-21.429	-18.571	-17.619	-23.333	-17.619
-15.714	-13.810	-18.571	-14.762	-12.857	-11.905	-20.476	-19.524	-14.762	-12.857	-12.857	-11.905
-10.952	-10.000	-10.000	-8.095	-10.952	-9.048	-17.619	-15.714	-9.048	-8.095	-8.095	-6.190
-9.048	-8.095	-7.143	-4.286	-8.095	-7.143	-14.762	-13.810	-3.333	2.381	-3.333	-2.381
-7.143	-6.190	-2.381	-0.476	-5.238	-3.333	-10.000	-9.048	3.333	4.286	-1.429	-0.476
-4.286	1.429	2.381	5.238	-2.381	-0.476	-6.190	-5.238	5.238	6.190	1.429	5.238
2.381	3.333	6.190	7.143	2.381	3.333	-4.286	-2.381	7.143	9.048	6.190	7.143
8.095	10.952	8.095	13.810	5.238	6.190	-1.429	4.286	10.952	12.857	10.000	12.857
14.762	15.714	14.762	16.667	10.000	12.857	5.238	6.190	13.810	16.667	14.762	15.714
17.619	18.571	17.619	18.571	17.619	18.571	7.143	10.000	17.619	19.524	17.619	18.571
21.429	23.333	21.429	22.381	19.524	25.238	12.857	14.762	20.476	21.429	19.524	21.429
24.286	26.190	26.190	27.143	27.143	28.095	16.667	19.524	23.333	24.286	22.381	25.238
28.095	29.048	28.095	30.000	29.048	30.000	20.476	22.381	26.190	29.048	26.190	28.095
						27.143	30.000				
Tolerance value on dimensions along Z direction as an end-to-end gradient in both X & Y directions = ± 0.500											
Tolerance value on all coordinates along X direction = ± 0.020											
Tolerance value on all coordinates along Y direction = ± 0.100											

All dimensions are in mm

Table 1

The detector plane with the x,y,z coordinates of the edges of the eight wires (Wire 1, Wire 2, Wire 3, Wire 4, Wire 5, Wire 6, Wire 7 and Wire 8) are shown in figure 3. The length and the width of the detector plane are 96.000 mm and 60.000 mm respectively with 12.000 mm separation between the wires and outer two wires (Wire 1 & Wire 8) being placed at a distance of 6.000 mm away from their nearest veto cathode cell boundaries as shown in figure 3.

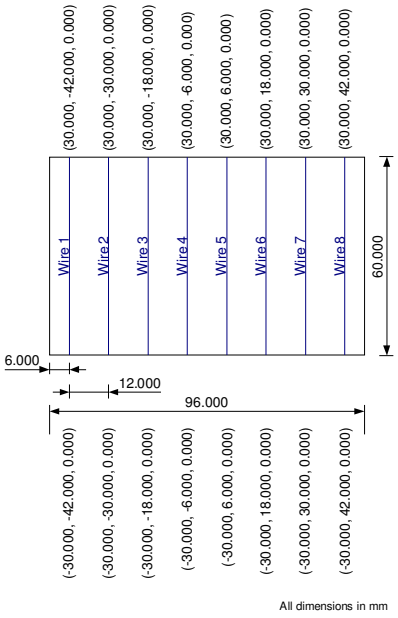

Figure 3. Detector Plane

The x,y,z coordinates of the eight wires and the tolerance values are listed in Table 2.

	Wire 1	**Wire 2**	**Wire 3**	**Wire 4**	**Wire 5**	**Wire 6**	**Wire 7**	**Wire 8**
	Z = 0.00							
	Start (X) = -30.00 End(X) = 30.00							
Y	-42.00	-30.00	-18.00	-6.00	6.00	18.00	30.00	42.00
Tolerance value on dimensions along Z direction as an end-to-end gradient in X direction = ± 0.50								
Tolerance value on all coordinates along X and Y directions = ± 0.07								

All dimensions are in mm

Table 2