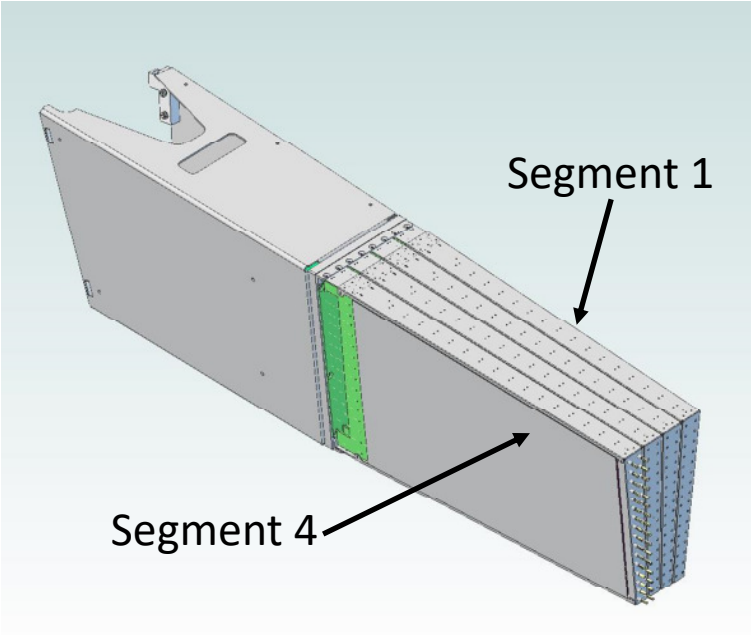
EUROPEAN
SPALLATION
SOURCE

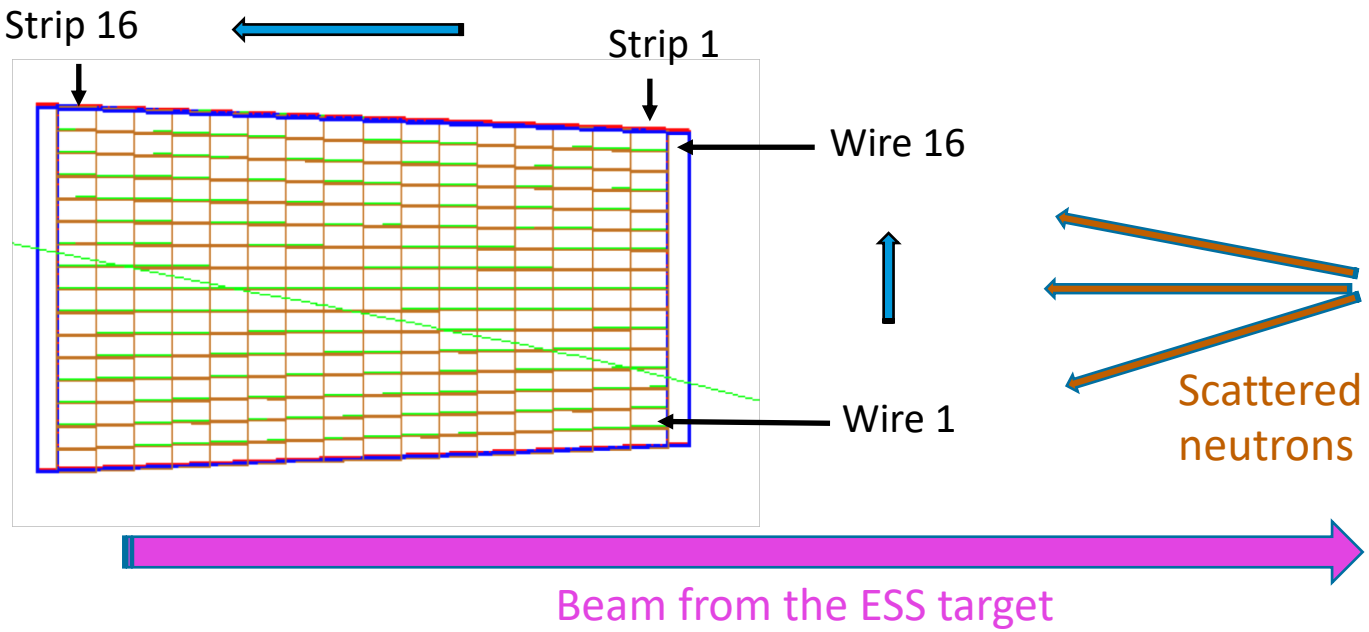
GEANT4 voxel shapes for the DREAM EndCap detector

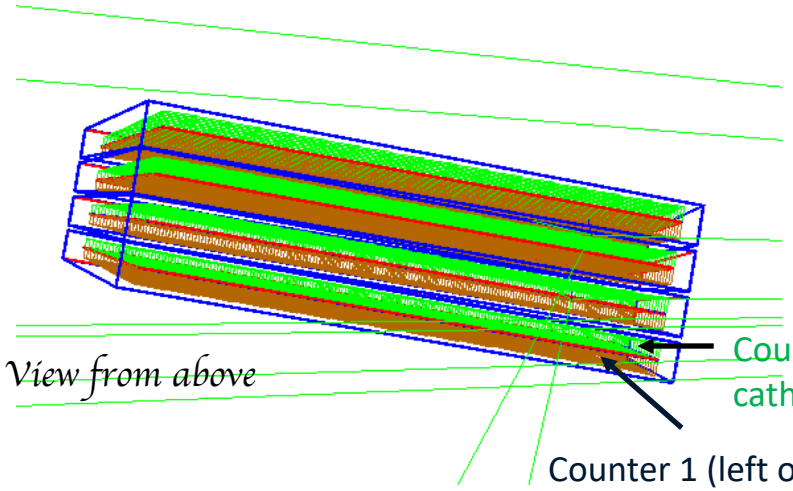
PRESENTED BY IRINA STEFANESCU

2020-08-14

Detector geometry, user defined conventions. Example for SUMO3



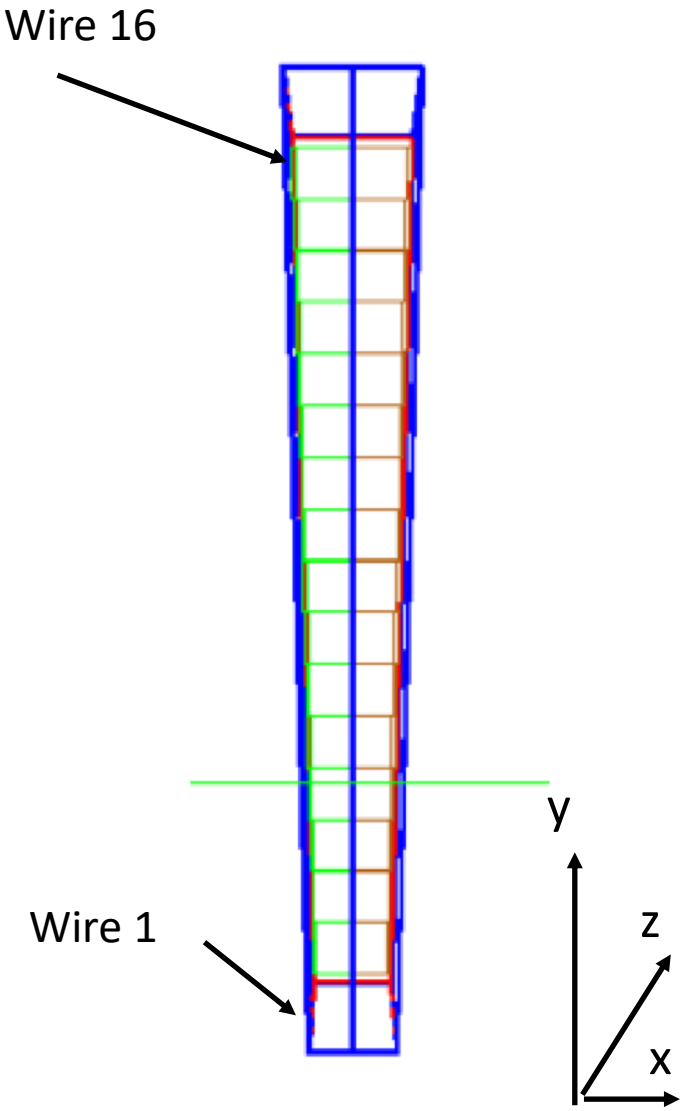


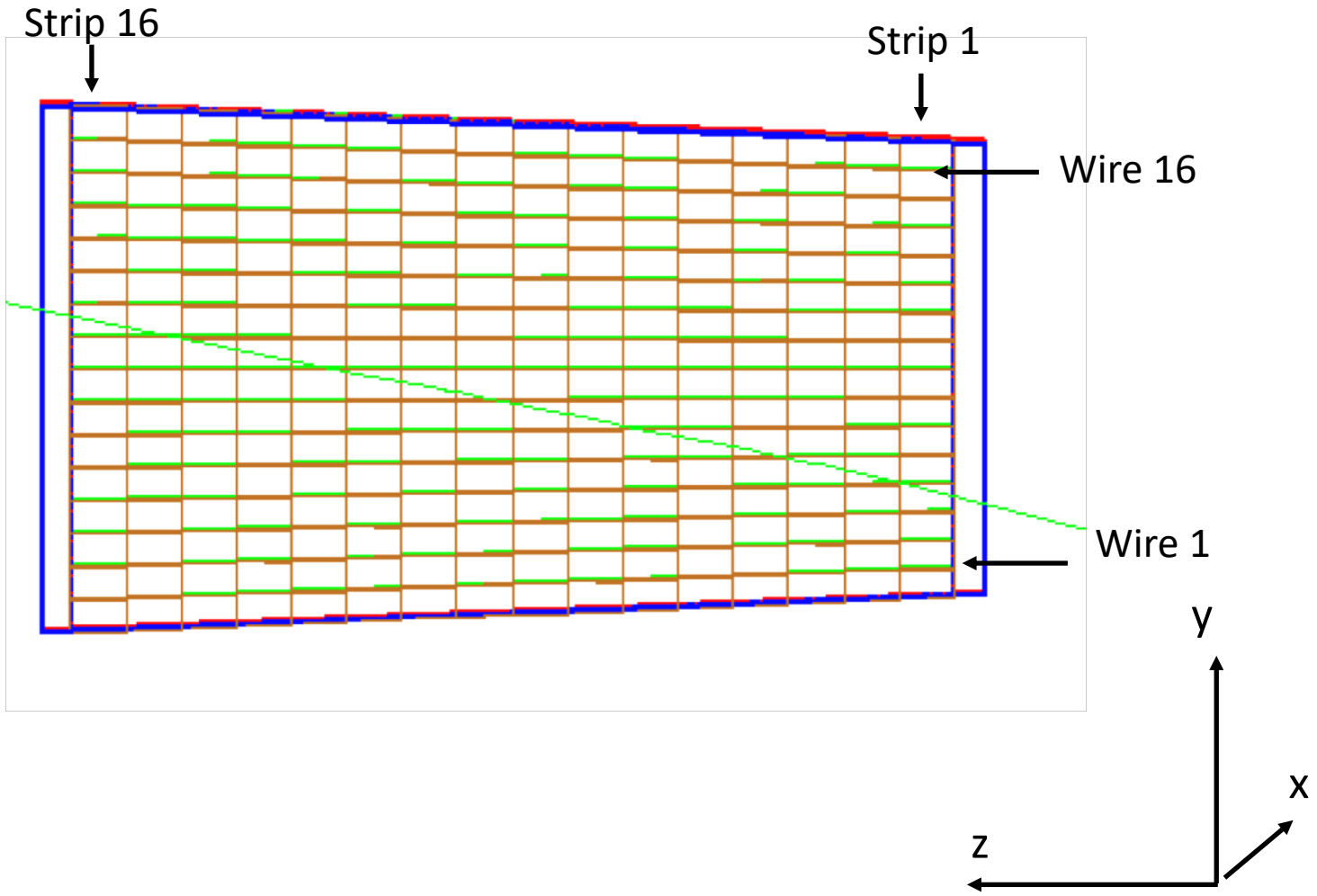


See also documentation uploaded in github

https://github.com/ess-dg/dream_endcap_analysis/tree/refactor/documentation

User defined conventions and the reference system





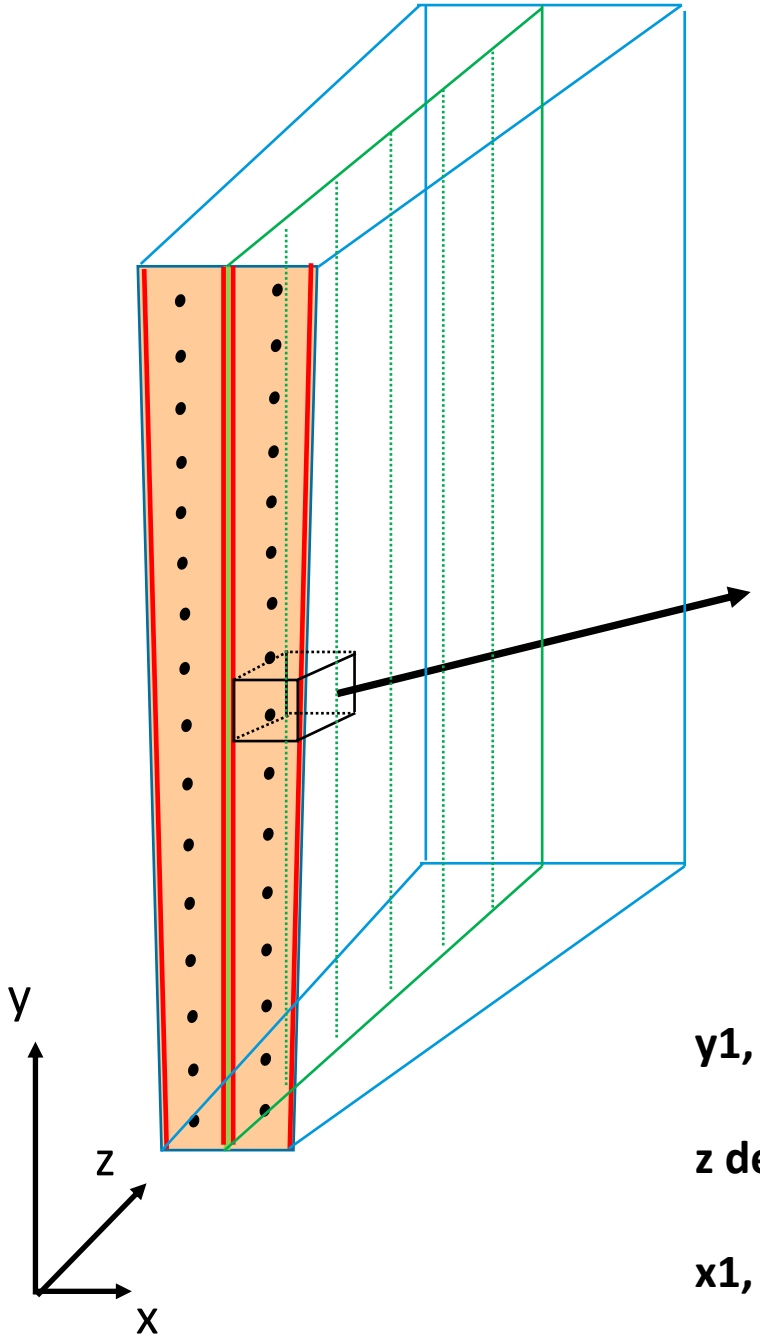
Description of the lookup table

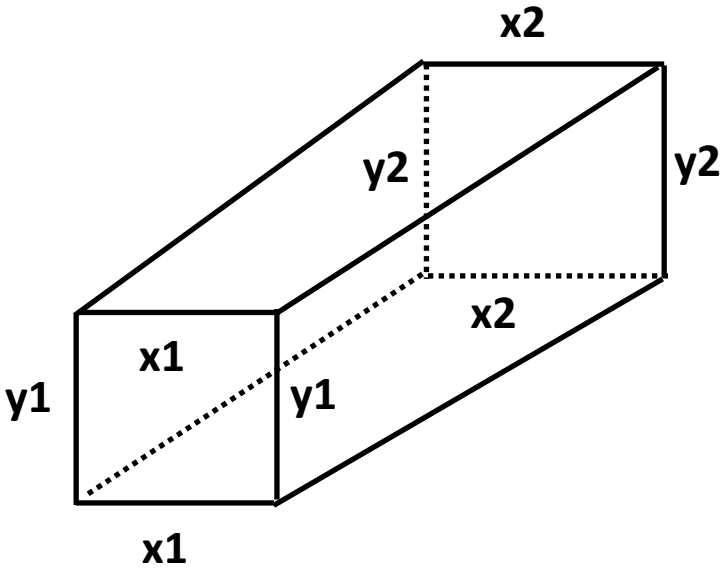
LookupTableDreamEndCap.txt

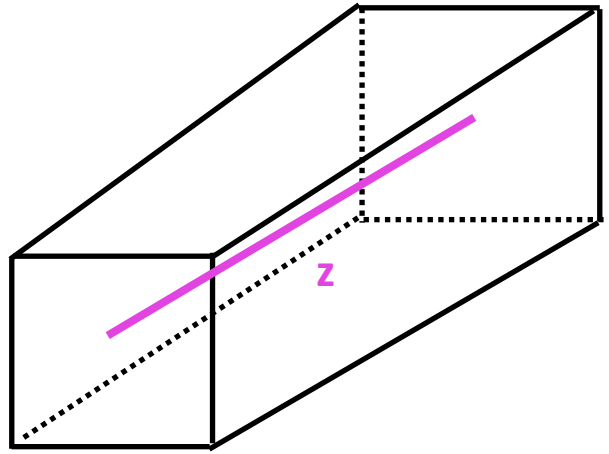
3	101	1	1	1	21.10	312.24	-1164.28	4.879	4.879	9.400	9.497	18.375
3	101	1	2	1	21.54	321.52	-1162.57	5.122	5.122	9.400	9.497	18.375
3	101	1	3	1	21.98	330.79	-1160.85	5.364	5.364	9.400	9.497	18.375
3	101	1	4	1	22.42	340.07	-1159.14	5.607	5.607	9.400	9.497	18.375
3	101	1	5	1	22.86	349.34	-1157.42	5.849	5.849	9.400	9.497	18.375
3	101	1	6	1	23.30	358.62	-1155.71	6.092	6.092	9.400	9.497	18.375
3	101	1	7	1	23.74	367.89	-1153.99	6.334	6.334	9.400	9.497	18.375
3	101	1	8	1	24.18	377.16	-1152.28	6.577	6.577	9.400	9.497	18.375
3	101	1	9	1	24.62	386.44	-1150.57	6.819	6.819	9.400	9.497	18.375
3	101	1	10	1	25.06	395.71	-1148.85	7.062	7.062	9.400	9.497	18.375
3	101	1	11	1	25.50	404.99	-1147.14	7.304	7.304	9.400	9.497	18.375
3	101	1	12	1	25.94	414.26	-1145.42	7.547	7.547	9.400	9.497	18.375
3	101	1	13	1	26.38	423.54	-1143.71	7.789	7.789	9.400	9.497	18.375
3	101	1	14	1	26.83	432.81	-1141.99	8.032	8.032	9.400	9.497	18.375
3	101	1	15	1	27.27	442.09	-1140.28	8.274	8.274	9.400	9.497	18.375
3	101	1	16	1	27.71	451.36	-1138.57	8.517	8.517	9.400	9.497	18.375
3	101	2	1	1	24.23	314.67	-1182.24	4.879	4.910	9.497	9.595	18.375
3	101	2	2	1	24.67	324.04	-1180.51	5.124	5.155	9.497	9.595	18.375

Column 1: sumo number
Column 2: 100*sector number + segment number
Column 3: strip number
Column 4: wire number
Column 5: counter number
Column 6: x-position of the voxel center wrt sample in mm
Column 7: y-position of the voxel center wrt sample in mm
Column 8: z-position of the voxel center wrt sample in mm

Column 9: x1 in mm
Column 10: x2 in mm
Column 11: y1 in mm
Column 12: y2 in mm
Column 13: z in mm



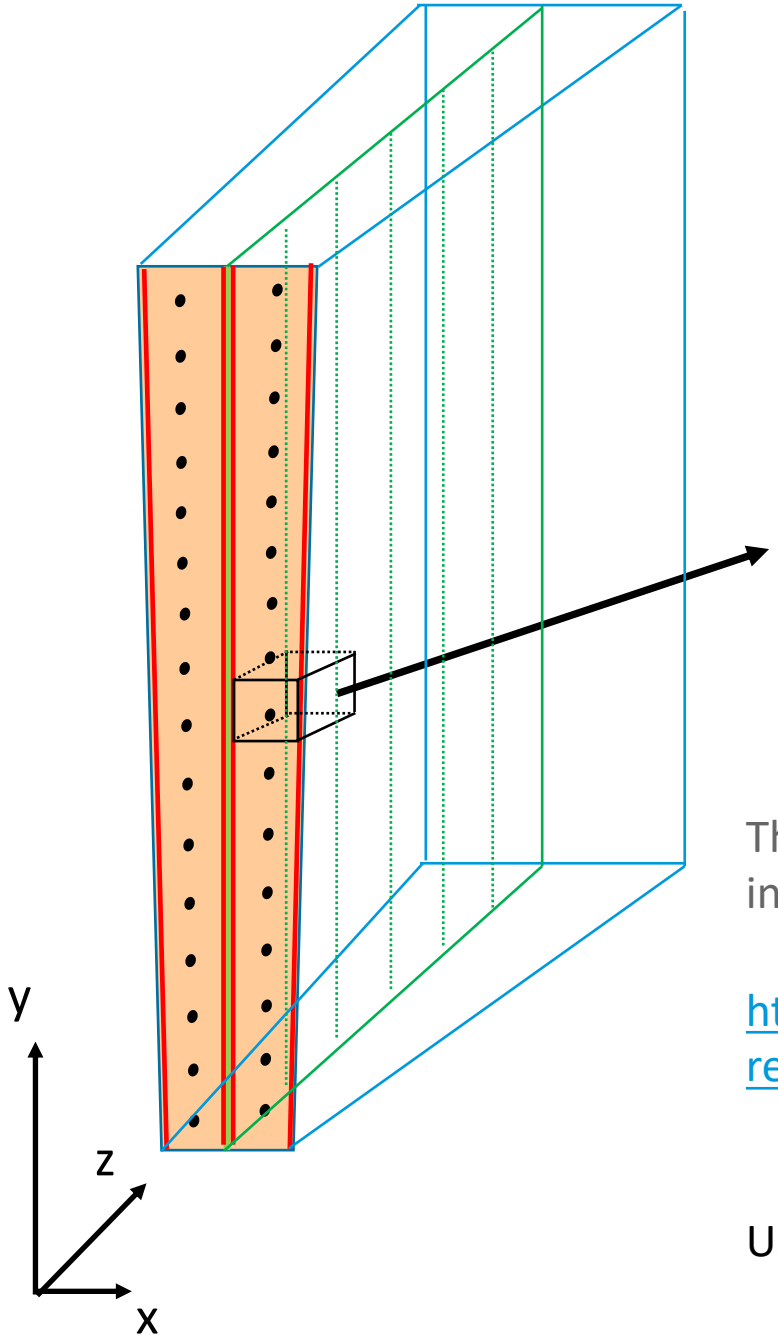


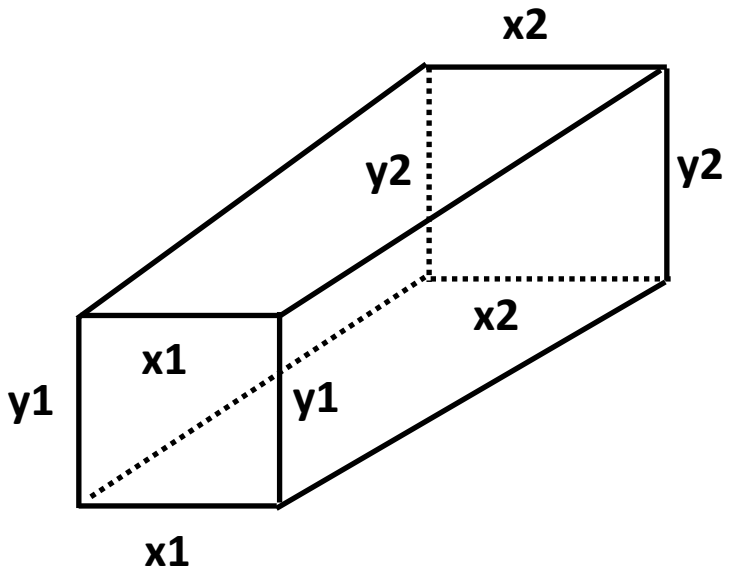


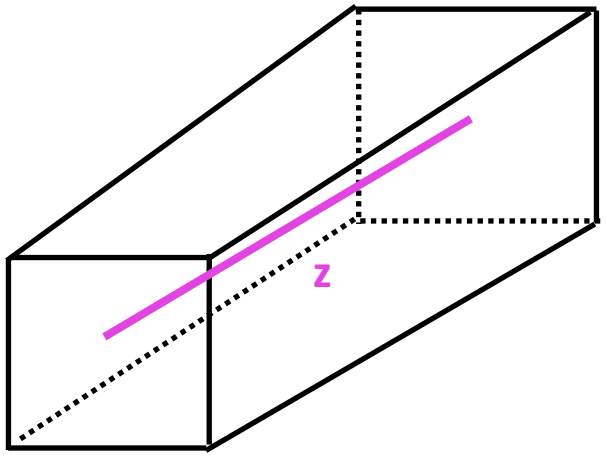
y1, y2 determined by the wire pitch

z determined by the strip size

x1, x2 determined by the cathode to segment wall distance







The gas voxels were built with the help of the G4Trap geometry class implemented in GEANT4:

https://gitlab.cern.ch/geant4/geant4/-/blob/geant4-10.5-release/source/geometry/solids/CSG/src/G4Trap.cc

Usage: G4Trap(”name",z,0.,0.,y2,x1,x1,0.,y1,x2,x2,0.)

Finish presentation

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