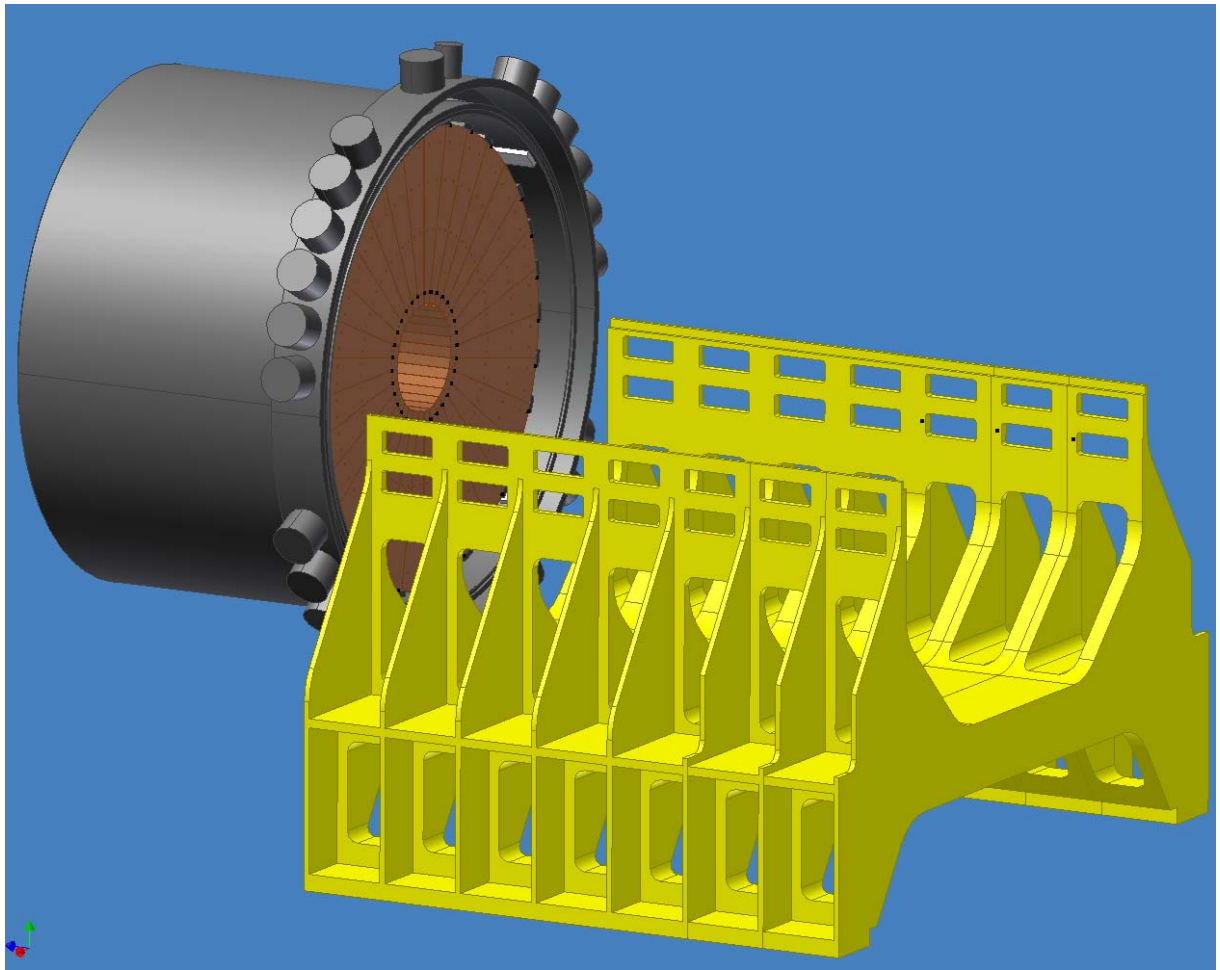
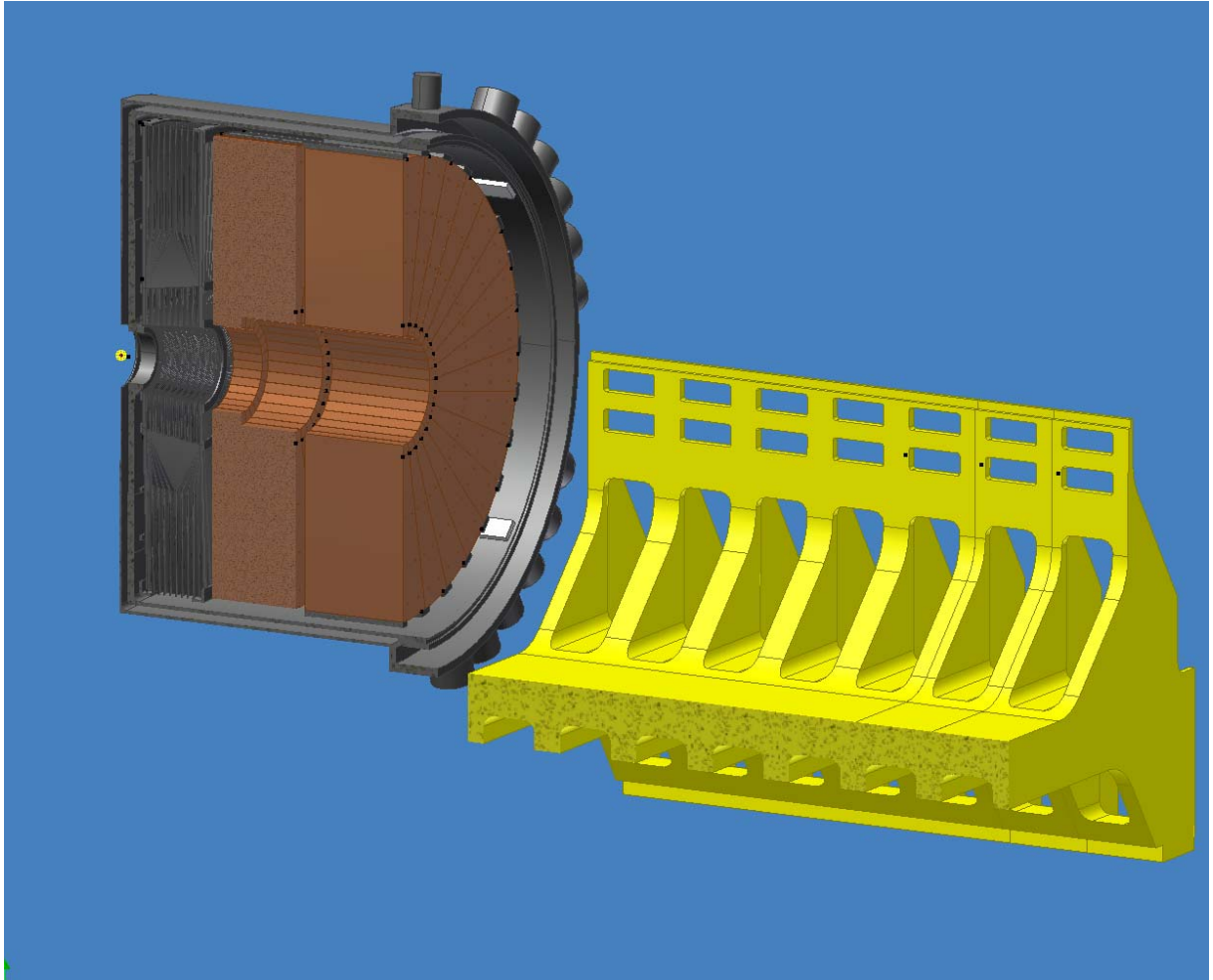
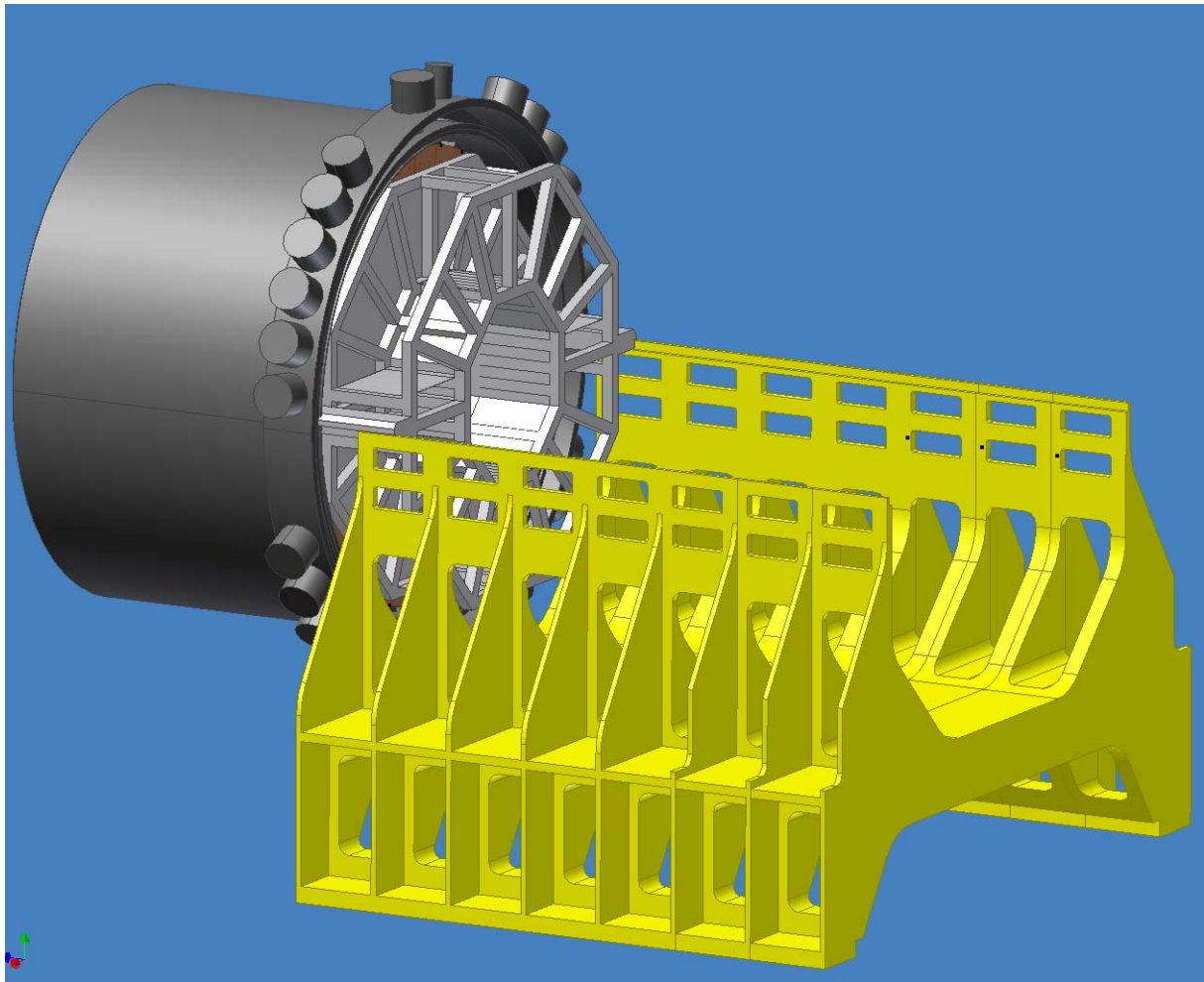




1A



1B



2A

Attachment A1

Dose rate fields, maps and tables (t=60d)

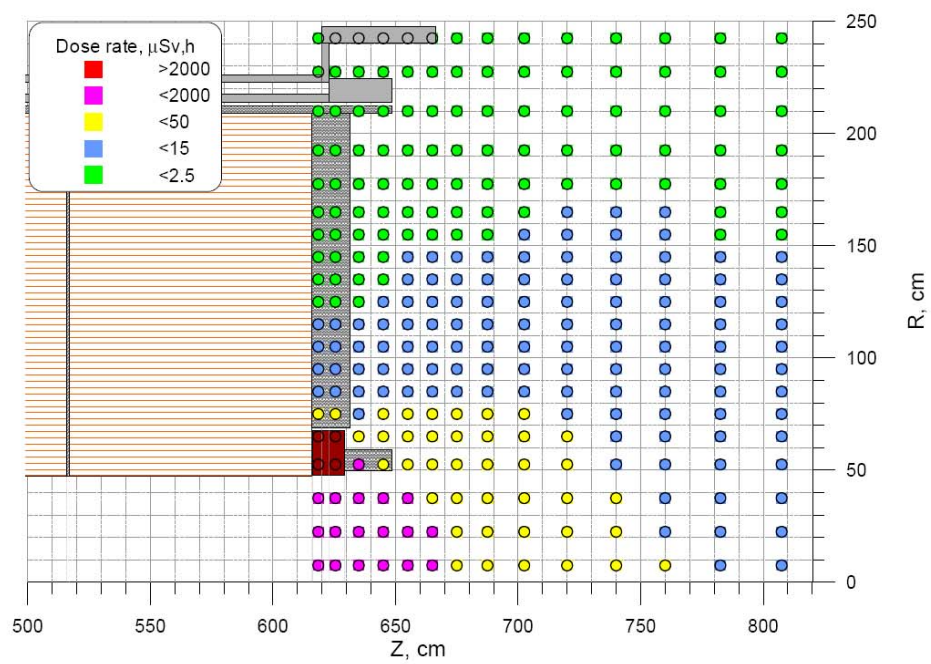
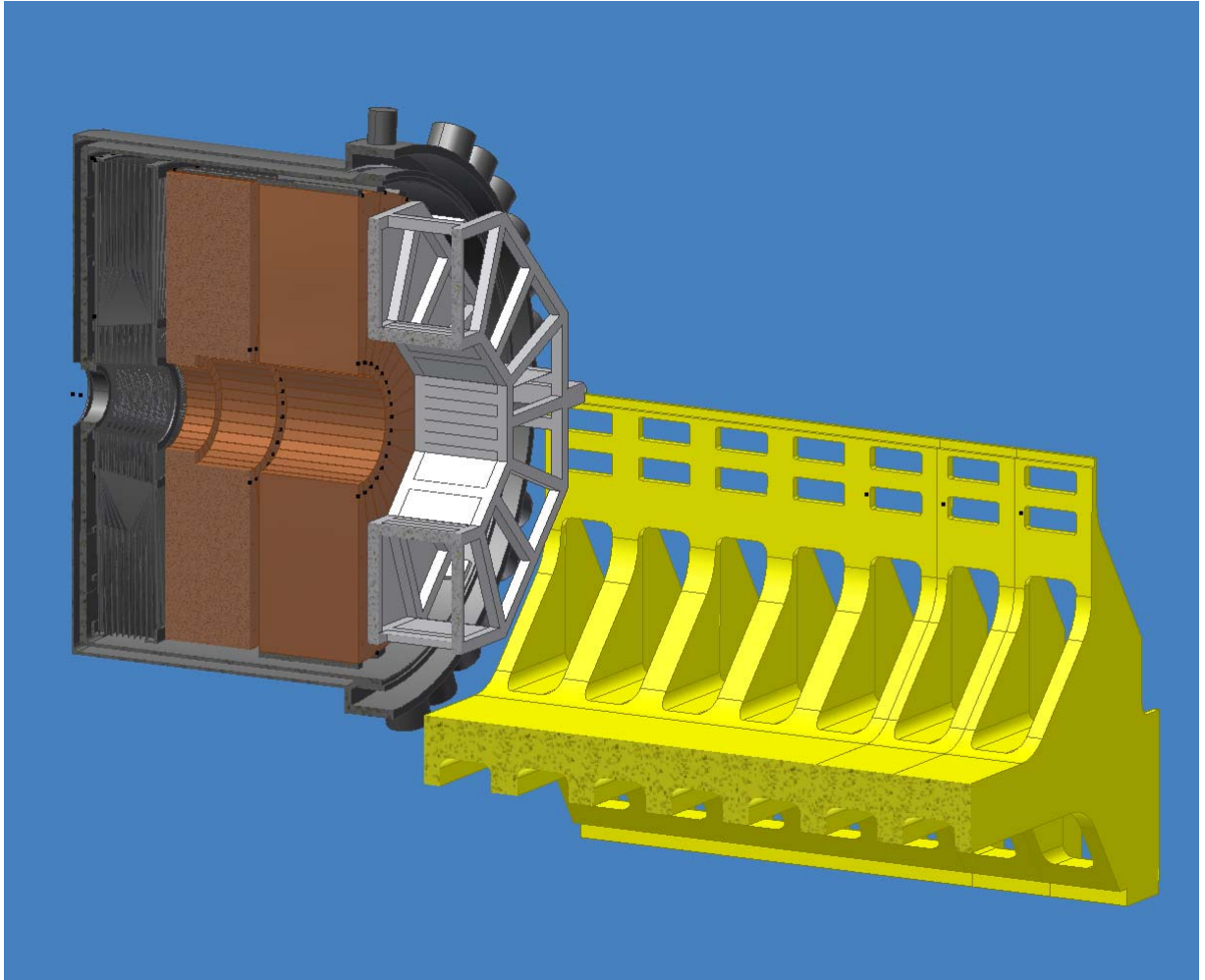


Fig. A1.11. Geomentry 4 (Plug 1 and cold bulkhead are removed), rear

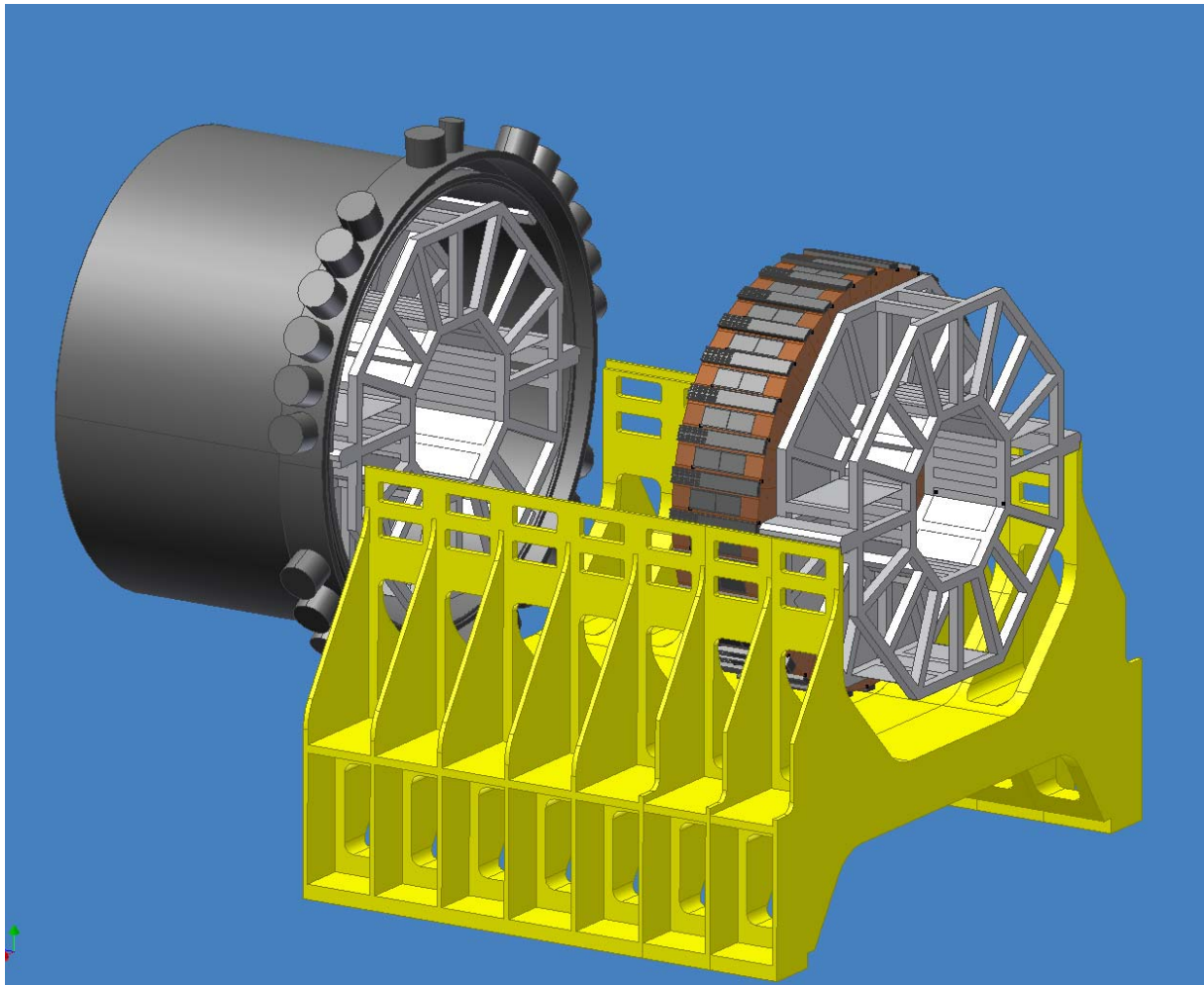
Table A1.11

Geometry 4 (Plug 1 and cold bulkhead are removed), rear - effective dose rate, $\mu\text{Sv/h}$

Z		616-621	621-630	630-640	640-650	650-660	660-670	670-680	680-695	695-710	710-730	730-750	750-770	770-795	795-820
R	ΔZ ΔR	5	9	10	10	10	10	10	15	15	20	20	20	25	25
0- 15	15	122.4	108.1	91.60	77.61	65.77	53.98	46.28	38.01	30.77	25.66	20.75	16.18	12.69	10.37
15- 30	15	118.9	106.5	89.78	74.83	62.63	51.46	42.56	35.29	28.28	21.91	17.43	14.40	11.51	9.07
30- 45	15	123.7	109.5	85.72	68.21	54.90	45.60	38.10	31.03	24.92	19.46	15.01	12.23	10.14	8.14
45- 60	15	118.8	114.0	57.20	46.52	39.97	36.03	32.01	27.06	22.36	18.21	14.07	11.13	9.14	7.66
60- 70	10	57.83	56.08	27.50	24.18	22.72	23.25	23.38	21.91	19.08	16.48	13.46	10.76	8.59	7.15
70- 80	10	19.22	16.64	14.86	15.85	15.31	15.28	15.87	16.47	16.36	14.56	12.48	10.26	8.18	6.70
80- 90	10	10.61	9.26	9.47	11.13	11.04	11.09	11.37	11.32	11.83	12.58	11.68	9.84	7.79	6.25
90- 100	10	6.52	5.90	6.37	7.92	8.41	8.18	8.77	9.04	8.37	8.85	10.29	9.65	7.73	5.95
100- 110	10	4.42	3.98	4.47	5.77	6.54	6.31	6.58	7.30	7.13	6.29	7.18	8.73	7.95	6.06
110- 120	10	2.99	2.73	3.19	4.36	5.05	5.10	5.10	5.71	6.13	5.47	4.91	6.10	7.56	6.50
120- 130	10	2.00	1.89	2.35	3.27	4.01	4.14	4.03	4.48	5.07	4.92	4.15	4.00	5.50	6.55
130- 140	10	1.38	1.33	1.76	2.48	3.22	3.41	3.33	3.55	4.09	4.39	3.82	3.30	3.51	5.16
140- 150	10	1.01	0.96	1.33	1.93	2.59	2.84	2.83	2.88	3.29	3.76	3.59	3.01	2.73	3.30
150- 160	10	0.75	0.71	1.02	1.53	2.10	2.37	2.39	2.44	2.69	3.13	3.29	2.90	2.41	2.37
160- 170	10	0.55	0.52	0.79	1.22	1.73	1.98	2.02	2.11	2.24	2.55	2.87	2.80	2.32	2.00
170- 185	15	0.38	0.37	0.59	0.93	1.38	1.64	1.64	1.75	1.89	2.06	2.30	2.46	2.30	1.86
185- 200	15	0.27	0.26	0.44	0.69	1.06	1.36	1.32	1.36	1.57	1.69	1.77	1.94	2.14	1.90
200- 220	20	0.18	0.19	0.35	0.52	0.78	1.11	1.10	1.02	1.21	1.41	1.43	1.44	1.67	1.83
220- 235	15	0.11	0.13	0.17	0.21	0.54	0.90	0.96	0.81	0.88	1.16	1.26	1.16	1.19	1.51
235- 250	15	0.08	0.10	0.11	0.13	0.33	0.67	0.86	0.71	0.67	0.95	1.14	1.06	0.94	1.15



2B



3A

Attachment A1

Dose rate fields, maps and tables ($t=60d$)

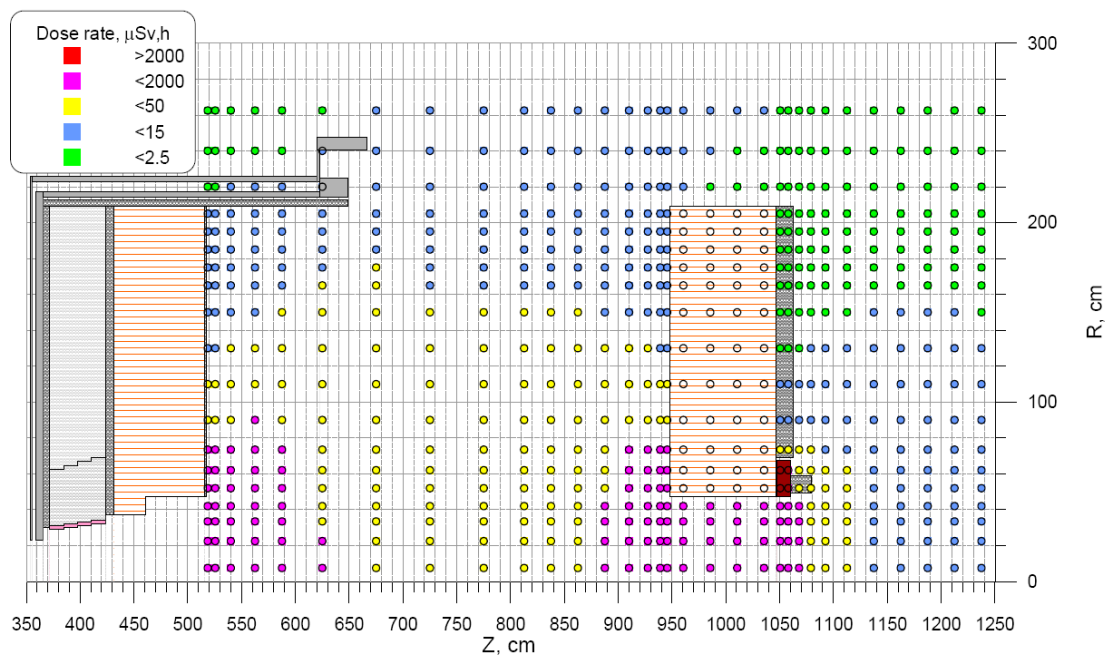


Fig. A1.12. Geomentry 5 (Plug 1 and cold bulkhead are removed, HEC2 is shifted 431 cm)

Table A1.12

Geometry 5 (Plug 1 and cold bulkhead are removed, HEC2 is shifted 431 cm) - effective dose rate, $\mu\text{Sv/h}$

Z, cm		516-521	521-530	530-550	550-575	575-600	600-650	650-700	700-750	750-800	800-825	825-850	850-875	875-900	900-920	920-935	935-943
R, cm	$\frac{\Delta Z}{\Delta R}$	5	9	20	25	25	50	50	50	50	25	25	25	25	20	15	8
0- 15	15	335.3	296.3	224.2	143.3	93.92	58.65	35.90	26.89	23.60	26.66	32.95	44.22	61.91	85.81	110.2	130.4
15- 30	15	332.8	286.4	213.0	138.0	90.23	54.44	33.15	25.37	24.84	27.73	32.61	41.90	58.27	82.88	109.5	133.7
30- 37	7	324.9	272.8	194.1	125.0	83.33	49.83	30.10	23.12	23.46	27.37	32.55	41.31	55.53	78.77	108.3	139.6
37- 47	10	307.6	248.4	174.0	113.6	77.45	47.72	28.85	21.75	21.48	25.32	30.71	39.05	53.04	74.65	103.7	136.5
47- 57	10	229.2	196.0	144.5	98.12	68.93	45.03	27.93	20.98	19.69	22.76	27.23	34.19	46.54	66.71	95.80	134.7
57- 67	10	134.3	133.4	114.8	84.26	60.61	42.72	27.59	20.64	19.04	22.03	26.64	33.84	44.77	60.51	82.81	105.1
67- 80	13	71.12	79.70	81.80	69.96	51.70	38.87	27.32	21.59	20.46	23.06	26.32	30.68	38.96	50.21	61.73	68.64
80- 100	20	32.07	40.46	48.58	51.14	43.35	33.50	26.41	22.59	20.36	20.31	22.24	26.32	31.78	35.93	39.11	38.31
100- 120	20	15.60	20.43	28.45	33.12	35.74	28.29	22.72	19.85	18.72	19.20	20.13	21.81	23.38	23.62	23.53	20.85
120- 140	20	8.84	11.60	17.76	21.69	25.35	22.87	18.98	16.99	17.92	17.83	18.02	18.28	17.67	16.32	15.44	12.51
140- 160	20	5.33	6.89	11.70	14.22	17.78	18.70	16.34	15.36	15.46	16.15	16.24	15.82	14.17	12.50	11.39	8.70
160- 170	10	3.97	5.11	8.86	10.60	14.69	15.78	15.46	13.76	13.60	14.57	14.90	14.39	12.52	11.01	9.86	7.32
170- 180	10	3.39	4.36	7.49	9.06	13.04	14.26	15.03	12.63	12.41	13.30	13.85	13.46	11.66	10.44	9.26	6.83
180- 190	10	3.02	3.88	6.45	8.19	11.51	13.14	14.15	11.90	11.23	12.07	12.66	12.42	10.90	10.04	8.85	6.59
190- 200	10	2.79	3.60	5.69	7.79	10.09	12.46	13.02	11.48	10.19	10.84	11.47	11.28	10.10	9.72	8.58	6.51
200- 210	10	2.61	3.41	5.12	7.76	8.81	11.98	11.64	11.19	9.32	9.63	10.23	10.03	9.22	9.27	8.27	6.42
210- 230	20	1.55	2.07	2.96	5.05	4.68	7.39	9.45	10.77	8.63	8.03	8.32	8.15	7.80	8.35	7.53	6.02
230- 250	20	0.88	1.08	1.40	2.47	2.02	3.67	6.24	9.68	8.45	6.90	6.30	5.73	5.86	6.79	6.19	5.16
250- 275	25	0.89	1.02	1.16	1.98	1.76	2.38	3.81	7.48	8.42	6.75	5.33	4.01	3.99	4.82	4.30	3.72

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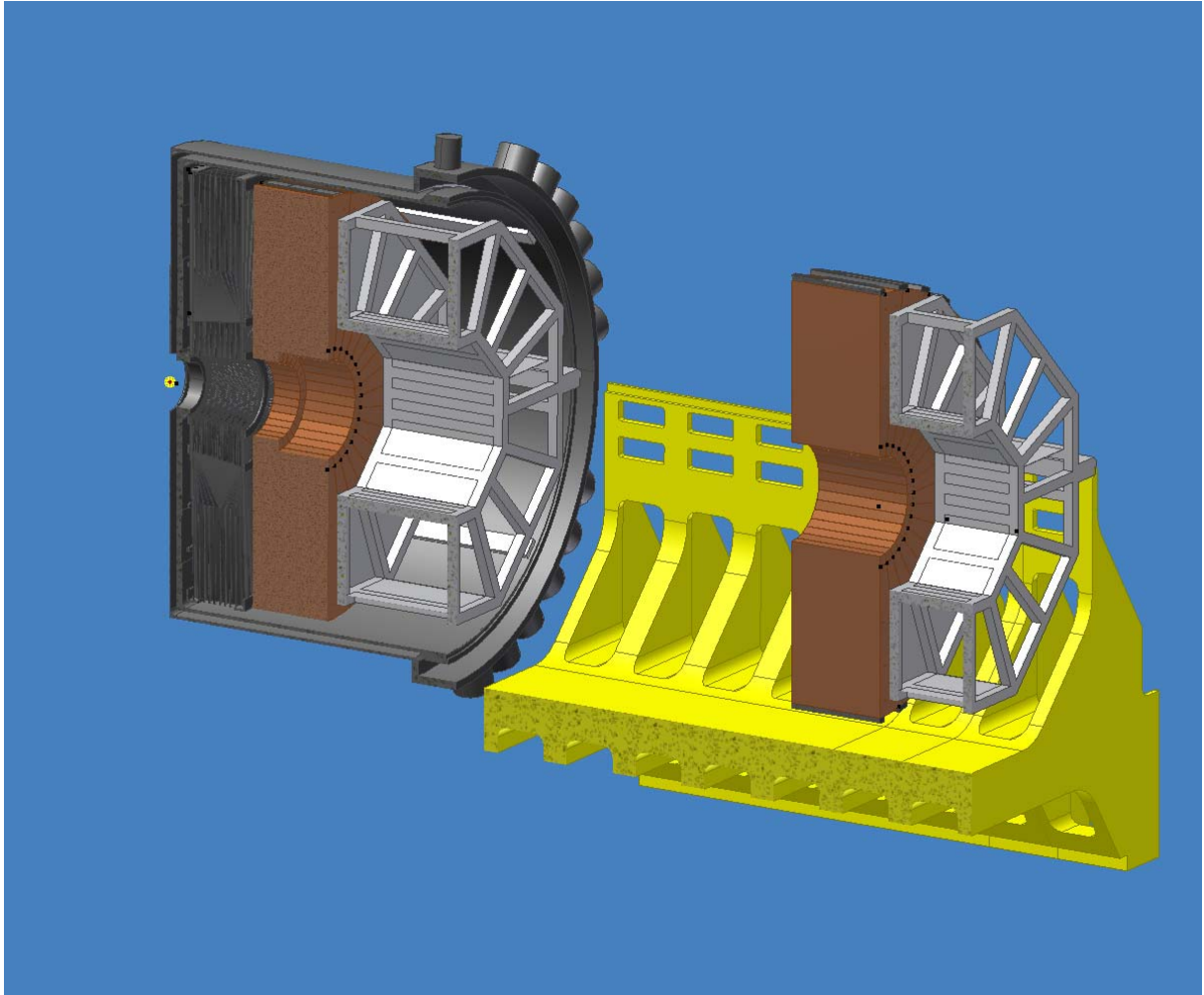
Table A1.12 (cont.)

Z, cm		943-948	948-973	973-998	998-1023	1023-1048	1048-1053	1053-1063	1063-1073	1073-1085	1085-1100	1100-1125	1125-1150	1150-1175	1175-1200	1200-1225	1225-1250
R, cm	$\frac{\Delta Z}{\Delta R}$	5	25	25	25	25	5	10	10	12	15	25	25	25	25	25	25
0- 15	15	143.9	176.1	178.3	139.5	102.5	78.49	67.09	56.94	43.41	33.07	22.61	14.32	9.47	6.95	5.54	4.67
15- 30	15	145.1	189.3	182.6	138.6	101.3	78.98	68.40	57.08	42.50	32.78	22.63	14.78	10.17	7.35	5.68	4.61
30- 37	7	153.7	213.9	190.9	138.2	100.8	83.36	71.40	57.18	41.42	31.46	21.55	14.19	9.94	7.23	5.40	4.18
37- 47	10	154.3	254.5	200.3	137.7	99.87	92.68	77.88	55.20	38.17	28.31	19.53	13.06	9.34	6.81	5.00	3.76
47- 57	10	162.4	347.2	201.6	114.5	76.50	122.8	102.4	46.70	30.72	23.75	17.27	11.68	8.30	6.10	4.52	3.40
57- 67	10	116.6	206.5	119.6	66.74	43.57	79.00	66.31	31.41	22.91	19.13	15.04	10.76	7.82	5.88	4.51	3.46
67- 80	13	70.29	104.0	62.42	34.72	21.70	22.30	18.58	17.18	15.48	14.01	12.51	9.74	7.47	5.90	4.71	3.75
80- 100	20	36.00	42.96	26.46	15.05	9.52	8.45	7.31	8.83	9.30	8.76	8.76	7.75	6.24	5.01	4.16	3.55
100- 120	20	18.20	17.12	9.94	5.88	4.18	3.65	3.25	4.50	5.52	5.26	5.59	5.65	5.12	4.36	3.52	2.86
120- 140	20	10.38	7.02	3.89	2.18	1.72	1.63	1.56	2.43	3.57	3.38	3.67	3.97	3.87	3.61	3.25	2.79
140- 160	20	6.97	3.33	1.65	0.91	0.81	0.80	0.78	1.37	2.43	2.33	2.48	2.89	2.89	2.81	2.65	2.44
160- 170	10	5.81	2.16	0.95	0.52	0.47	0.48	0.47	0.89	1.87	1.84	1.86	2.28	2.37	2.33	2.29	2.14
170- 180	10	5.55	1.70	0.64	0.36	0.32	0.34	0.34	0.66	1.58	1.61	1.54	1.95	2.09	2.06	2.04	1.98
180- 190	10	5.49	1.42	0.43	0.26	0.25	0.25	0.24	0.49	1.34	1.43	1.30	1.68	1.87	1.82	1.82	1.79
190- 200	10	5.53	1.24	0.32	0.18	0.19	0.19	0.17	0.36	1.13	1.30	1.11	1.43	1.66	1.65	1.61	1.62
200- 210	10	5.62	1.20	0.23	0.13	0.14	0.13	0.12	0.26	0.95	1.18	0.96	1.22	1.48	1.49	1.46	1.45
210- 230	20	5.42	3.91	1.23	0.24	0.11	0.06	0.07	0.16	0.72	1.03	0.80	0.97	1.24	1.30	1.27	1.24
230- 250	20	4.82	4.68	4.26	2.42	0.77	0.05	0.05	0.09	0.51	0.87	0.66	0.71	0.98	1.09	1.07	1.04
250- 275	25	3.59	3.79	4.10	4.05	3.04	0.04	0.04	0.06	0.34	0.72	0.58	0.50	0.74	0.89	0.91	0.88

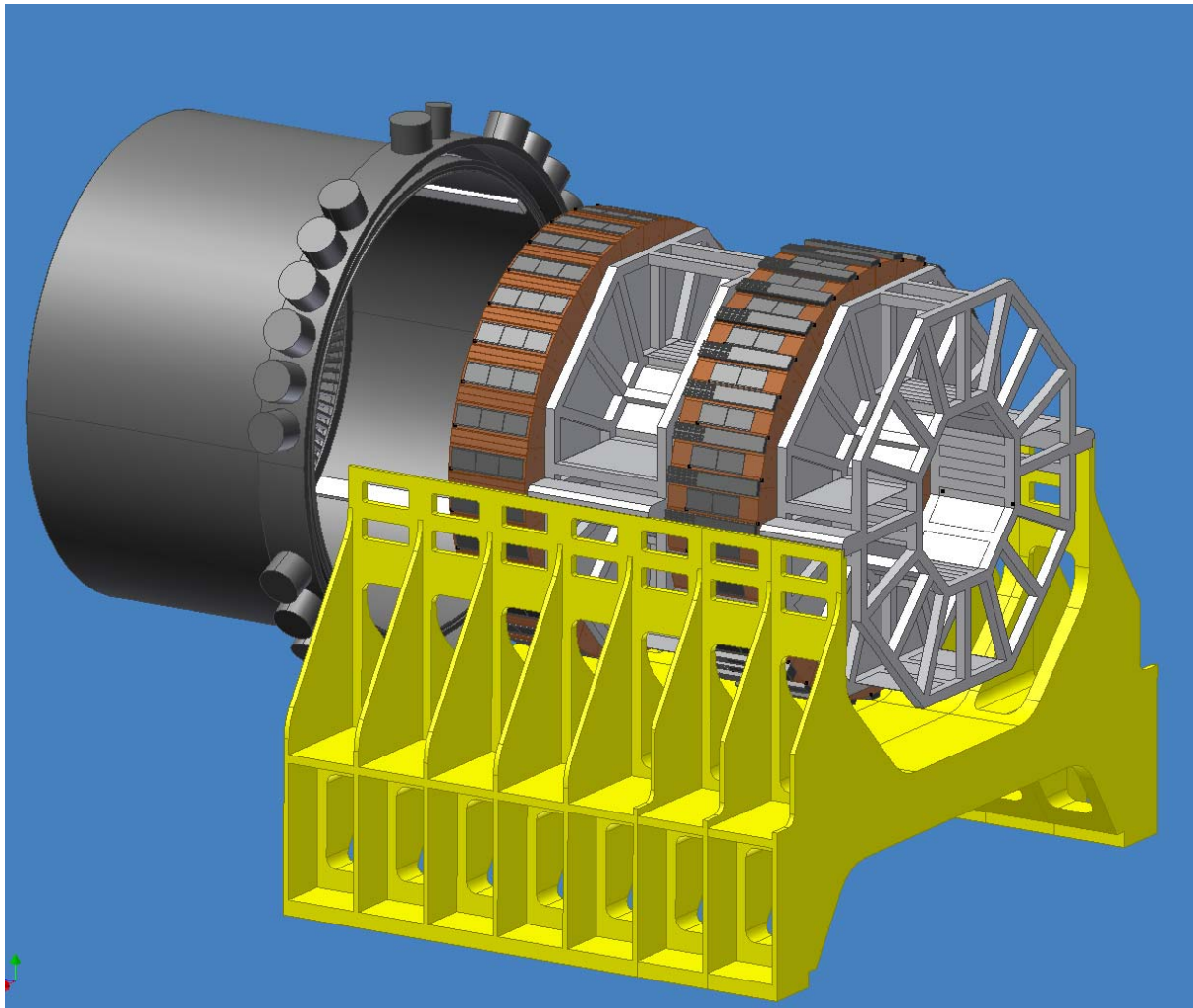
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3B



4A

Attachment A1

Dose rate fields, maps and tables (t=60d)

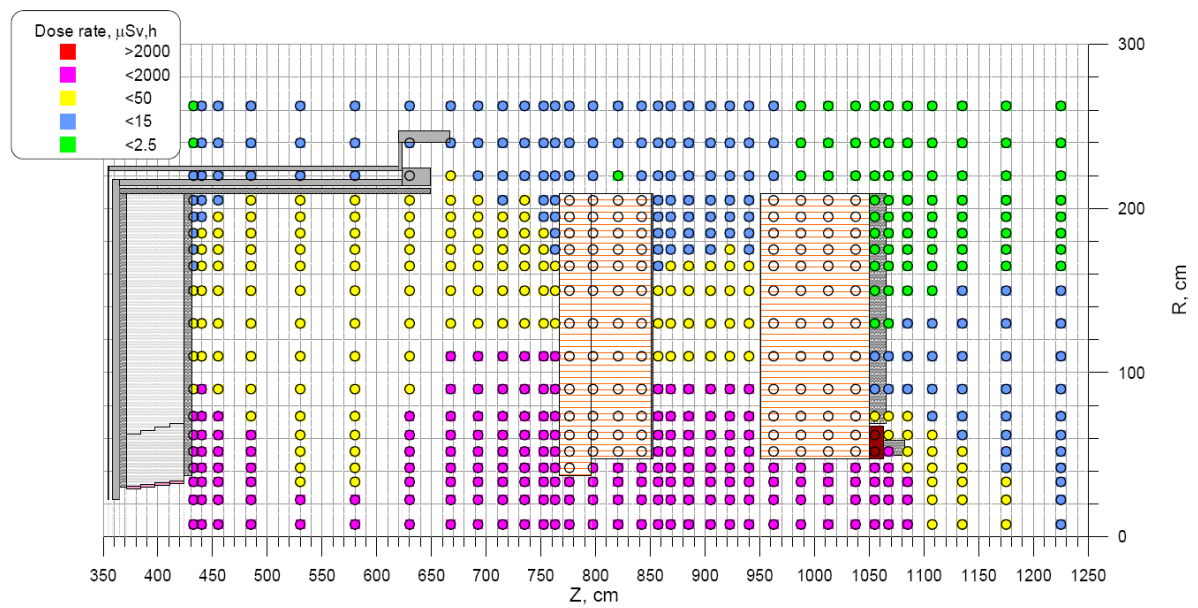


Fig. A1.13. Geomentry 6 (HEC2 is shifted 434 cm, HEC2 is shifted 335 cm)

Table A1.13

Geometry 6 (HEC2 is shifted 434 cm, HEC2 is shifted 335 cm) - effective dose rate, $\mu\text{Sv/h}$

Z, cm		430-435	435-445	445-465	465-505	505-555	555-605	605-655	655-680	680-705	705-725	725-745	745-760	760-766	766-786	786-809	809-832	832-852
R, cm	ΔZ ΔR	5	10	20	40	50	50	50	25	25	20	20	15	6	20	23	23	20
0- 15	15	121.9	113.0	92.09	68.79	54.02	51.13	61.21	84.81	117.6	170.6	246.4	346.7	424.2	550.2	623.6	544.7	421.1
15- 30	15	118.3	108.0	87.54	64.68	50.60	49.92	63.42	86.72	117.1	163.2	231.8	334.0	427.0	611.6	663.1	559.9	431.9
30- 37	7	112.9	100.8	81.59	60.24	47.14	47.05	60.50	83.69	112.3	154.5	220.2	319.4	420.4	713.3	718.0	584.9	454.2
37- 47	10	106.7	95.59	76.79	56.97	44.80	44.71	56.32	77.47	104.1	143.3	200.9	297.5	404.9	932.3	814.1	623.7	495.2
47- 57	10	93.74	86.90	71.21	53.66	43.00	43.04	54.69	76.26	101.0	134.8	181.8	256.8	309.9	628.2	606.2	574.5	505.1
57- 67	10	80.31	76.08	64.85	50.59	41.91	43.37	55.97	74.03	92.53	120.2	157.8	201.7	223.9	408.2	361.3	320.3	281.4
67- 80	13	65.25	64.25	57.34	48.09	42.30	43.94	53.04	66.41	83.58	105.3	128.0	149.2	153.3	261.6	211.8	169.7	142.4
80- 100	20	49.11	51.94	49.38	44.58	39.45	39.31	47.44	59.18	71.31	83.78	92.12	100.6	95.55	150.2	111.3	78.95	62.04
100- 120	20	33.49	37.92	38.13	36.17	33.38	35.46	42.10	50.10	57.45	61.73	62.73	64.76	57.23	82.80	55.65	35.65	27.59
120- 140	20	22.43	26.58	28.33	29.10	29.64	32.95	36.37	41.77	45.24	45.03	44.08	43.66	35.59	46.83	29.40	16.96	12.80
140- 160	20	15.70	19.50	22.08	24.79	27.28	28.84	31.62	34.43	35.35	32.62	32.40	30.46	23.66	29.03	17.13	9.17	7.08
160- 170	10	12.71	16.34	19.31	22.63	24.76	26.20	28.45	30.07	29.40	25.81	26.16	23.54	17.79	20.17	11.59	6.06	4.77
170- 180	10	11.63	15.36	18.29	20.97	23.24	24.40	26.49	27.55	25.99	22.07	23.06	19.85	14.78	15.86	8.69	4.57	3.76
180- 190	10	11.10	14.88	17.25	19.14	21.99	22.74	24.68	25.27	22.96	19.15	20.41	16.75	12.38	12.98	6.75	3.36	2.99
190- 200	10	10.36	13.87	15.78	17.80	21.07	21.36	23.06	23.07	20.06	16.82	18.15	14.05	10.27	10.27	5.46	2.72	2.45
200- 210	10	9.33	12.61	14.52	16.89	20.05	20.34	21.79	21.10	17.63	14.77	16.06	11.45	7.90	7.18	3.77	1.95	1.95
210- 230	20	5.16	6.85	8.08	9.69	11.52	12.03	13.29	17.62	14.26	12.45	13.55	8.66	5.44	4.59	2.76	1.45	2.92
230- 250	20	2.26	2.96	3.57	4.28	5.19	5.61	7.12	11.74	10.21	10.18	10.99	6.37	4.17	3.87	3.60	3.11	4.80
250- 275	25	2.02	2.66	3.00	3.58	4.36	4.48	4.33	7.52	6.40	8.40	8.55	4.53	3.18	3.03	3.20	4.30	5.26

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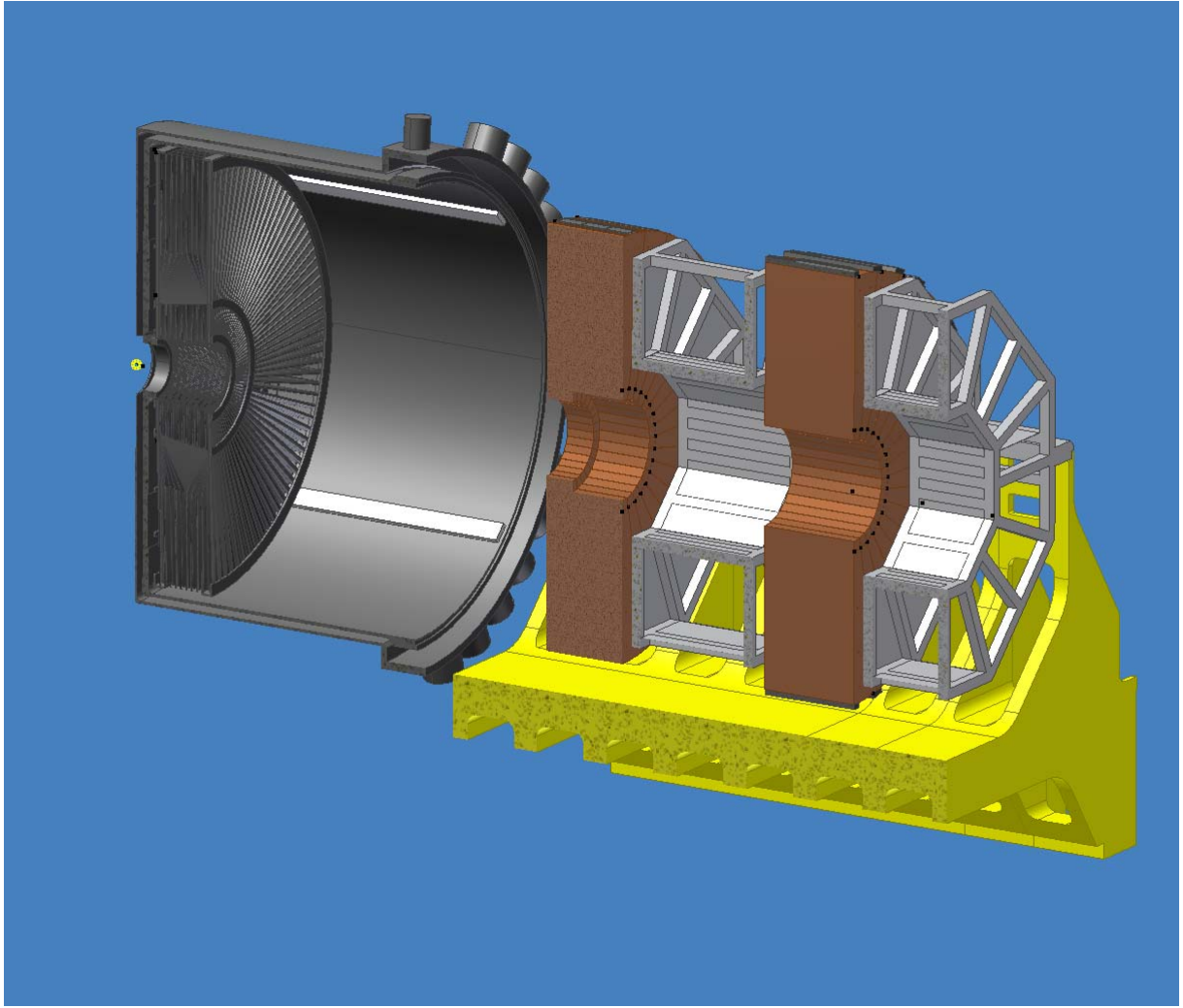
Table A1.13 (cont.)

Z, cm		852-862	862-875	875-895	895-915	915-930	930-950	950-975	975-1000	1000-1025	1025-1050	1050-1060	1060-1075	1075-1095	1095-1120	1120-1150	1150-1200	1200-1250
R, cm	ΔZ ΔR	10	13	20	20	15	20	25	25	25	25	10	15	20	25	30	50	50
0- 15	15	324.5	264.8	214.4	183.2	173.1	187.0	213.8	209.2	166.0	125.3	98.2	81.54	61.30	43.95	29.93	18.72	11.45
15- 30	15	324.3	258.8	209.1	178.1	174.5	192.3	229.5	215.9	165.1	121.8	95.5	77.54	56.32	39.44	26.63	16.73	10.48
30- 37	7	316.6	250.4	196.7	168.5	167.0	192.6	249.2	221.0	162.0	118.2	95.0	74.74	52.29	34.99	23.42	15.18	9.83
37- 47	10	291.6	222.3	177.6	152.2	152.5	185.1	292.3	230.5	157.8	114.1	103.9	73.29	45.98	30.56	20.70	13.89	9.08
47- 57	10	230.8	184.8	153.1	137.1	138.9	177.0	355.3	209.6	118.6	77.56	124.7	64.65	35.10	25.60	18.36	12.44	8.36
57- 67	10	160.1	145.8	130.8	121.9	124.0	148.0	211.8	122.6	68.11	43.11	79.46	40.78	23.46	19.35	14.56	10.55	7.77
67- 80	13	102.3	105.0	103.2	101.6	101.3	105.8	108.8	63.79	35.46	22.03	22.04	16.90	15.44	14.04	12.13	8.46	6.24
80- 100	20	58.47	67.41	72.49	75.46	74.05	70.15	47.15	26.90	15.30	9.69	8.23	8.06	9.10	9.01	8.56	6.93	4.80
100- 120	20	34.86	42.60	46.34	49.72	49.47	45.42	20.44	10.14	5.96	4.24	3.55	4.00	5.34	5.47	5.84	5.16	4.18
120- 140	20	22.59	28.93	30.30	32.46	33.98	30.78	9.37	3.97	2.21	1.73	1.61	2.16	3.41	3.50	4.00	3.91	3.34
140- 160	20	15.50	20.57	20.63	21.19	23.97	21.94	4.95	1.69	0.94	0.82	0.79	1.21	2.33	2.34	2.85	2.93	2.69
160- 170	10	12.16	16.19	15.94	15.57	18.78	17.28	3.32	0.96	0.53	0.47	0.48	0.79	1.80	1.77	2.23	2.38	2.33
170- 180	10	10.44	13.85	13.52	12.77	16.11	14.85	2.62	0.66	0.37	0.32	0.34	0.60	1.54	1.49	1.89	2.10	2.09
180- 190	10	9.11	11.84	11.66	10.59	13.73	12.80	2.11	0.44	0.27	0.25	0.25	0.45	1.33	1.28	1.59	1.87	1.85
190- 200	10	7.88	10.02	10.01	9.04	11.76	10.96	1.72	0.32	0.18	0.19	0.19	0.34	1.15	1.12	1.34	1.67	1.64
200- 210	10	6.75	8.42	8.75	7.81	10.03	9.31	1.39	0.23	0.13	0.14	0.13	0.25	1.00	0.99	1.13	1.51	1.46
210- 230	20	5.41	6.53	7.28	6.59	7.86	7.17	2.52	0.20	0.10	0.08	0.08	0.17	0.81	0.87	0.88	1.29	1.26
230- 250	20	4.23	4.63	5.86	5.68	5.77	5.13	4.08	0.53	0.18	0.11	0.10	0.15	0.65	0.78	0.65	1.06	1.08
250- 275	25	3.35	3.18	4.79	5.21	4.18	3.44	4.16	1.52	0.30	0.16	0.12	0.14	0.50	0.72	0.49	0.85	0.93

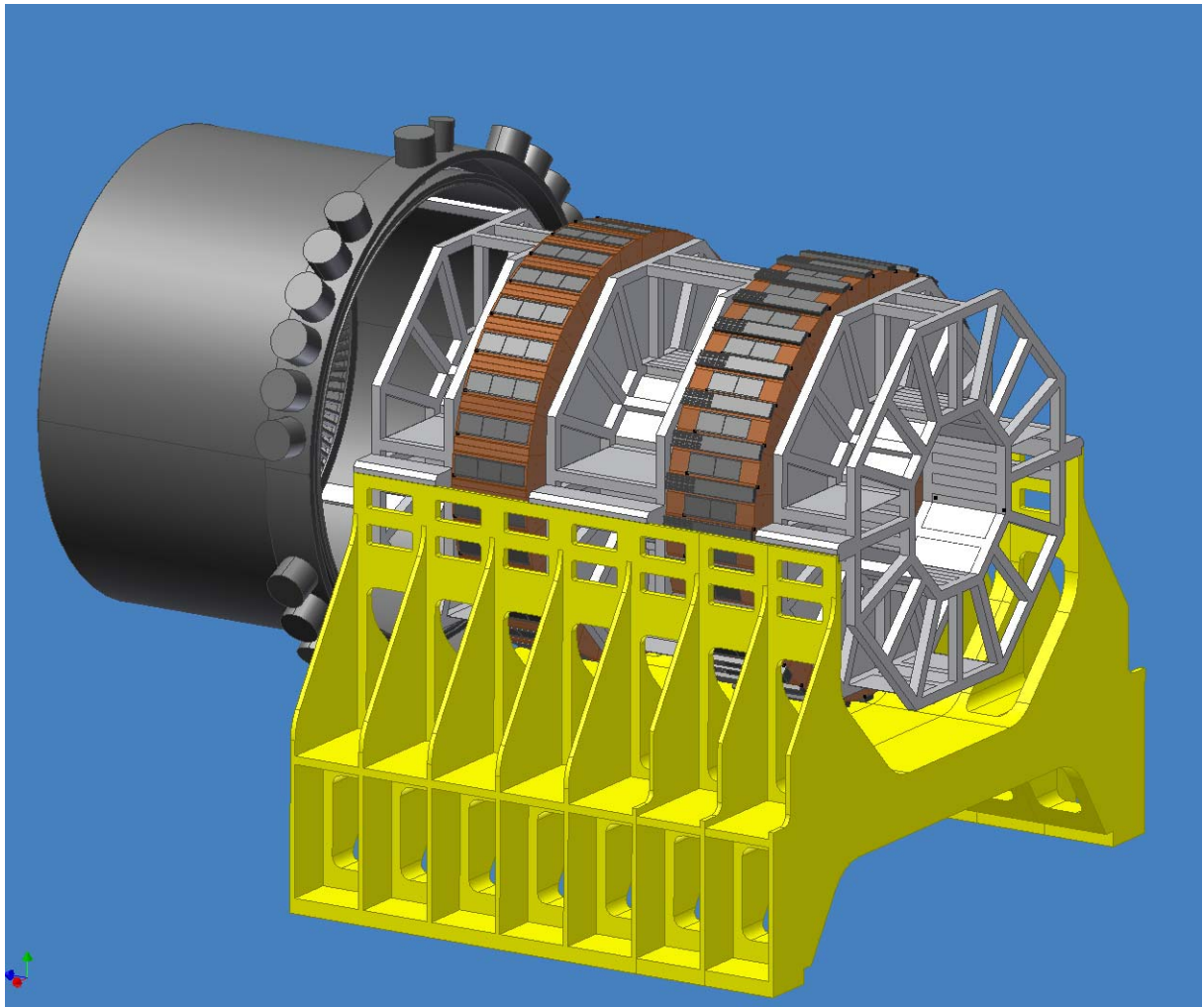
Activation Study of the ATLAS Liquid Argon End-Cap Calorimeter

draft 4/3/2009

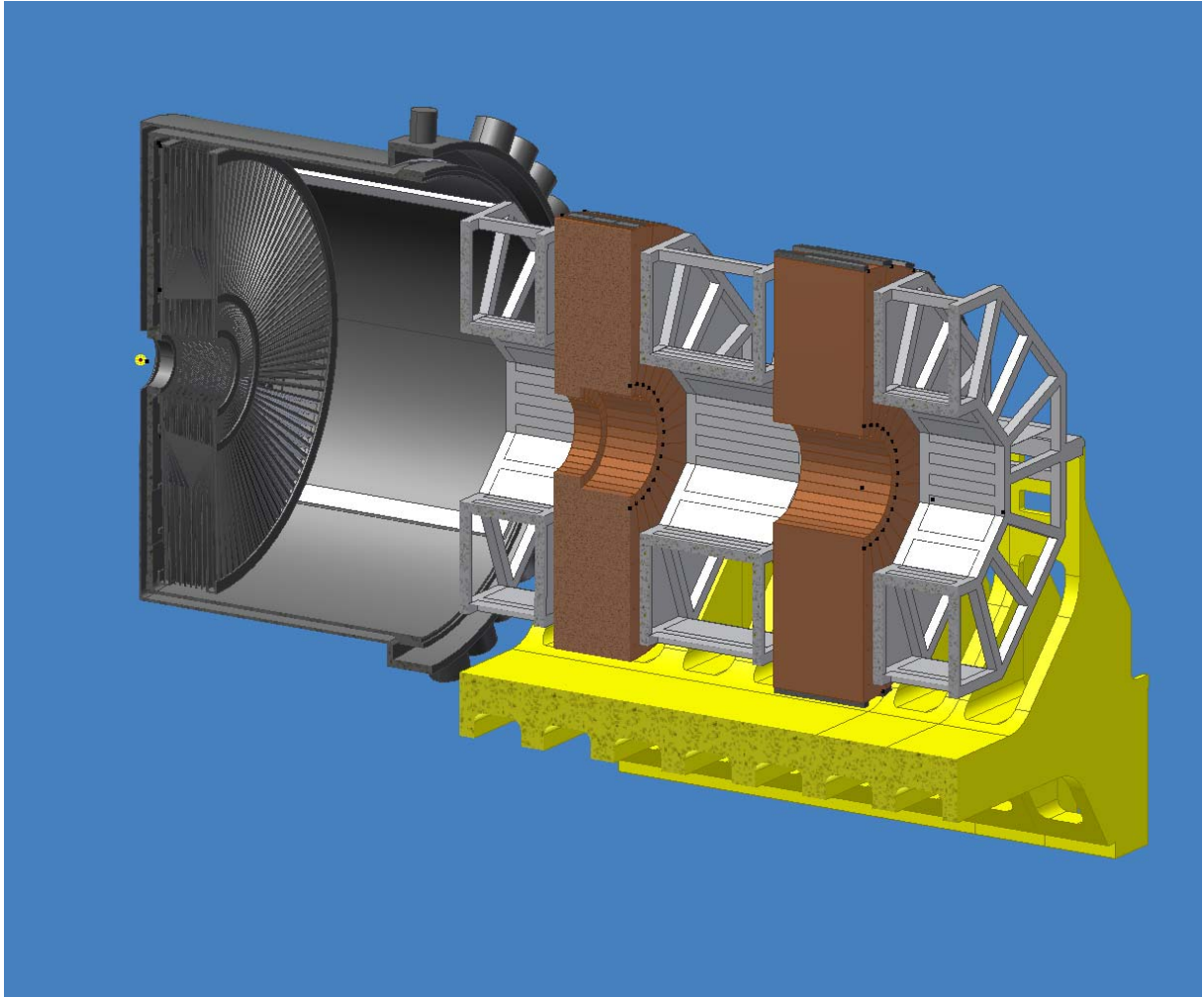
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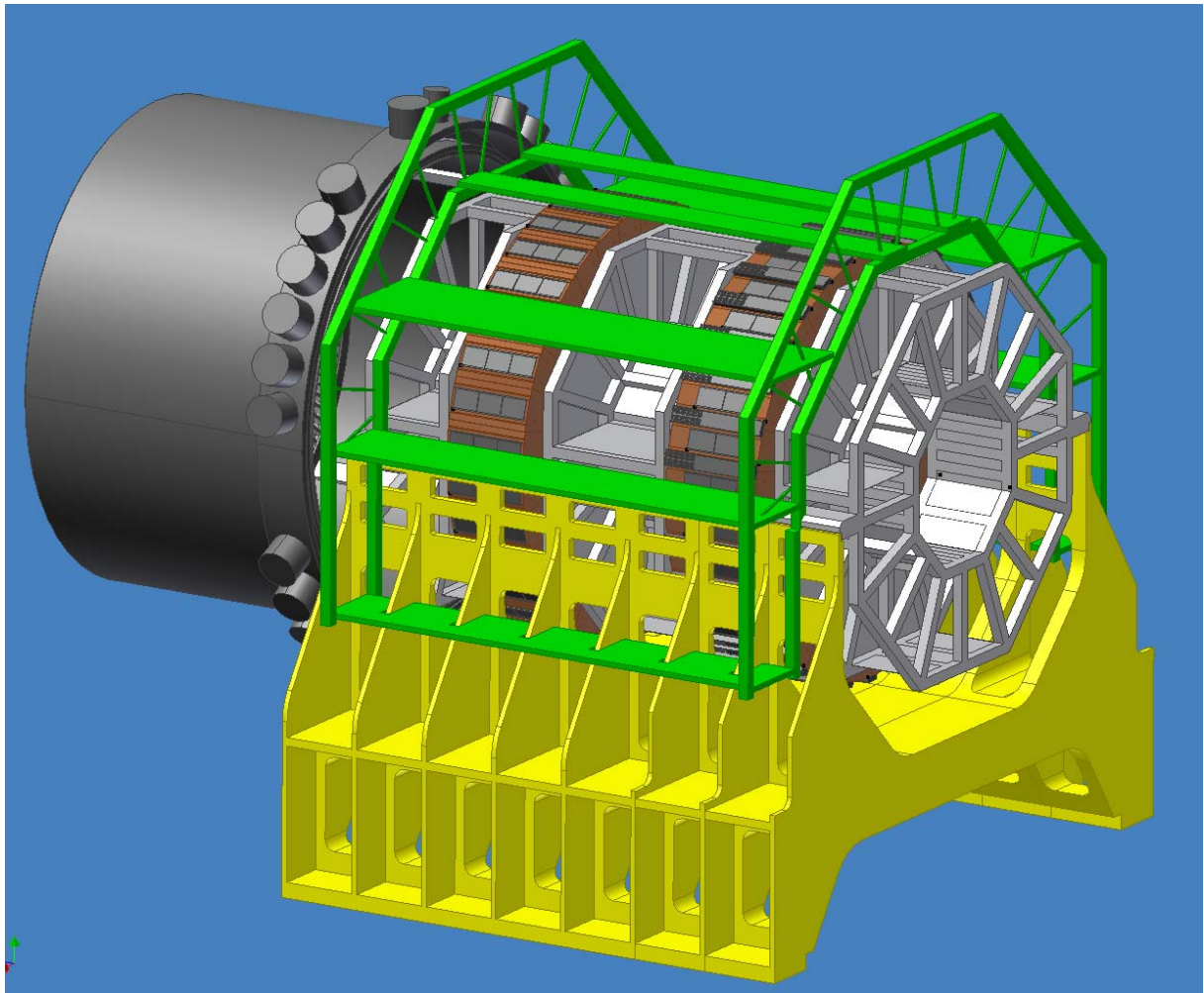
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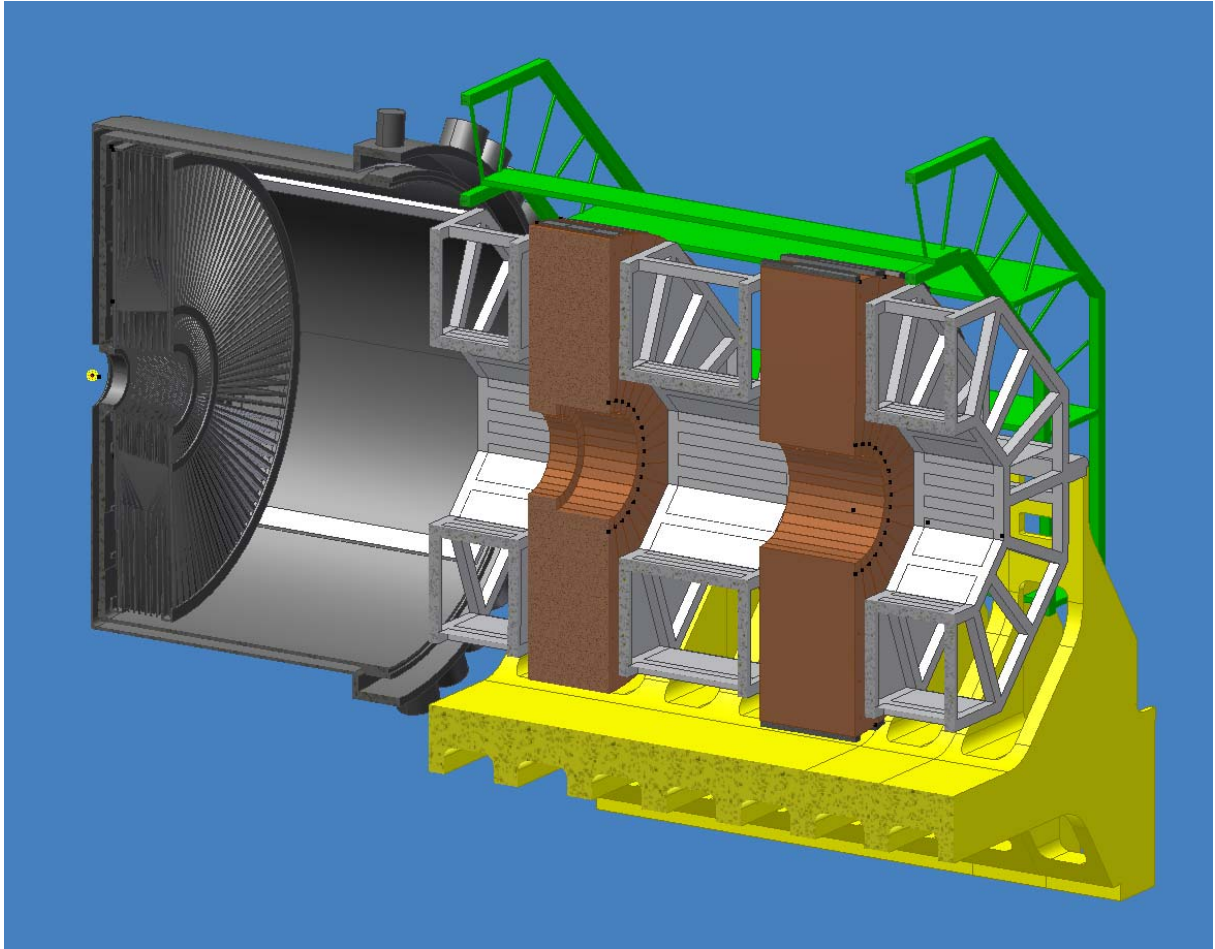
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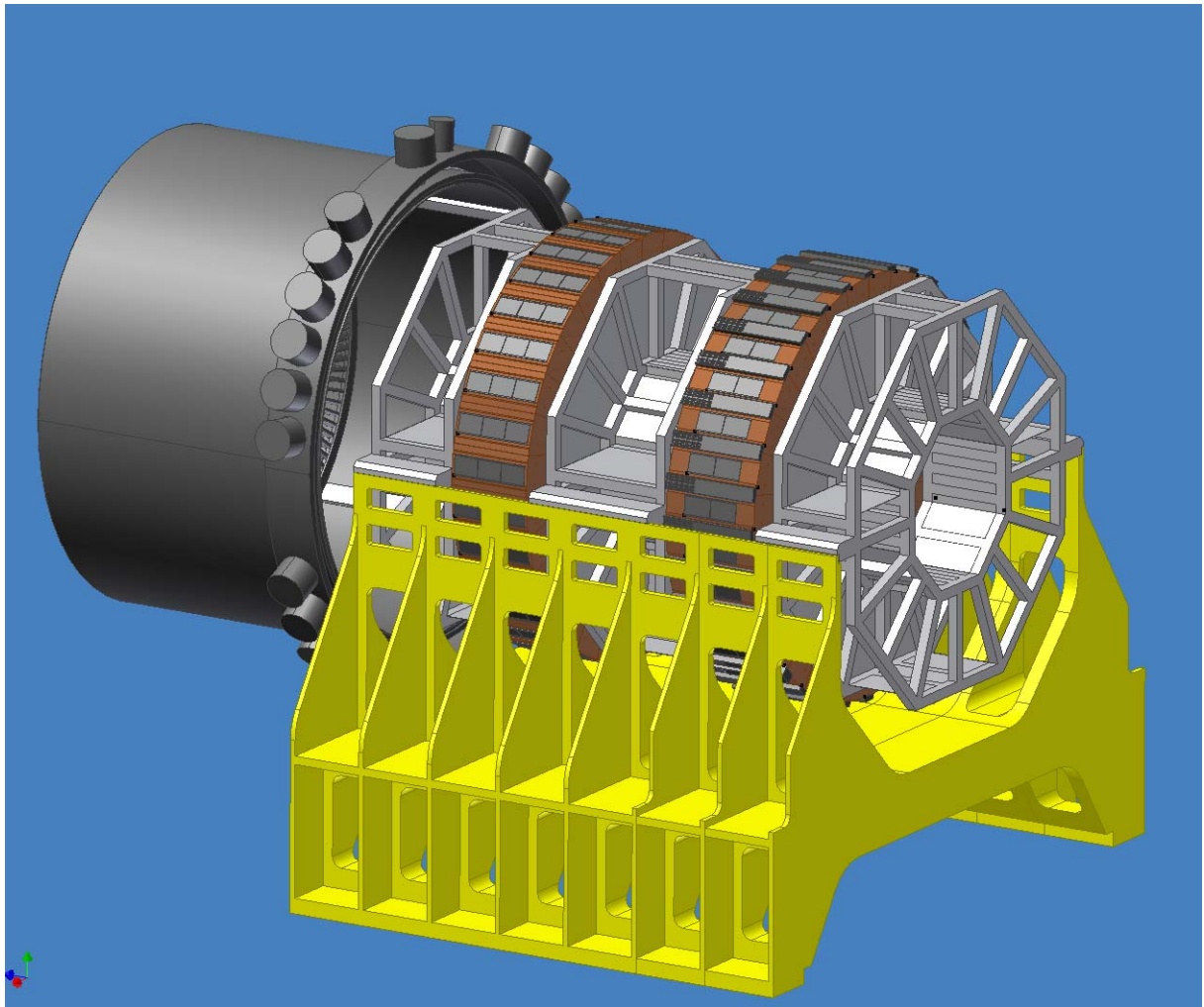
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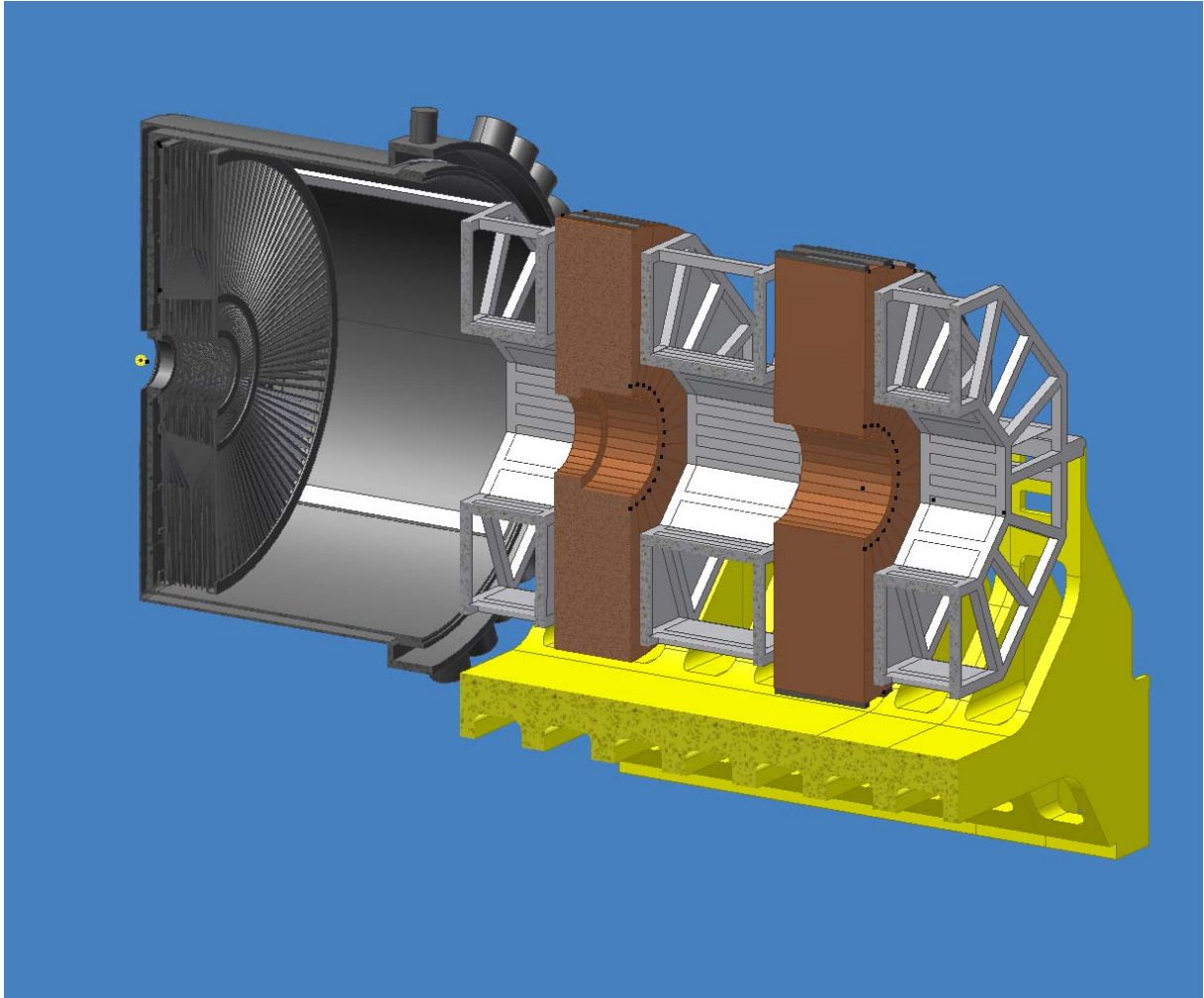
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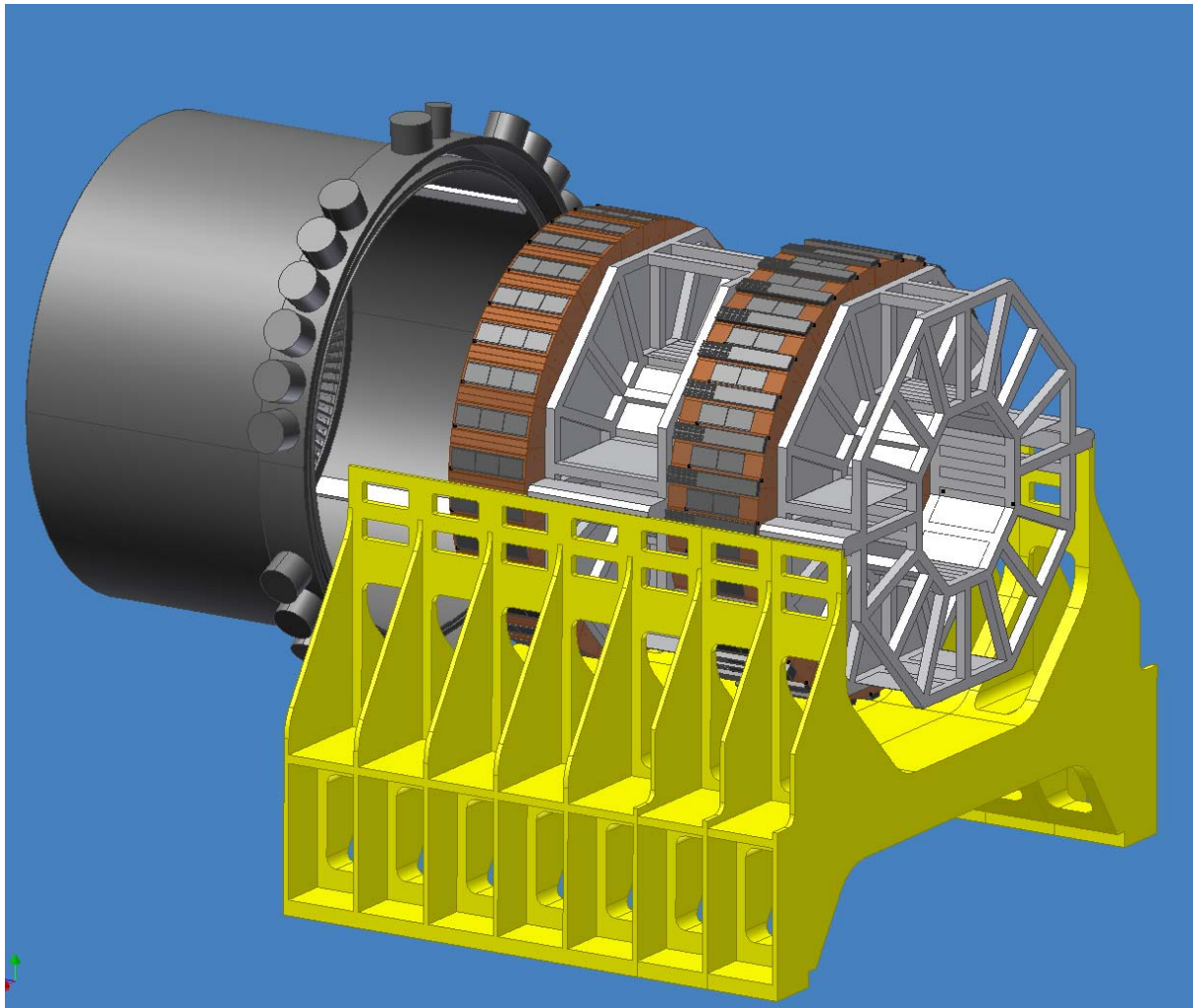
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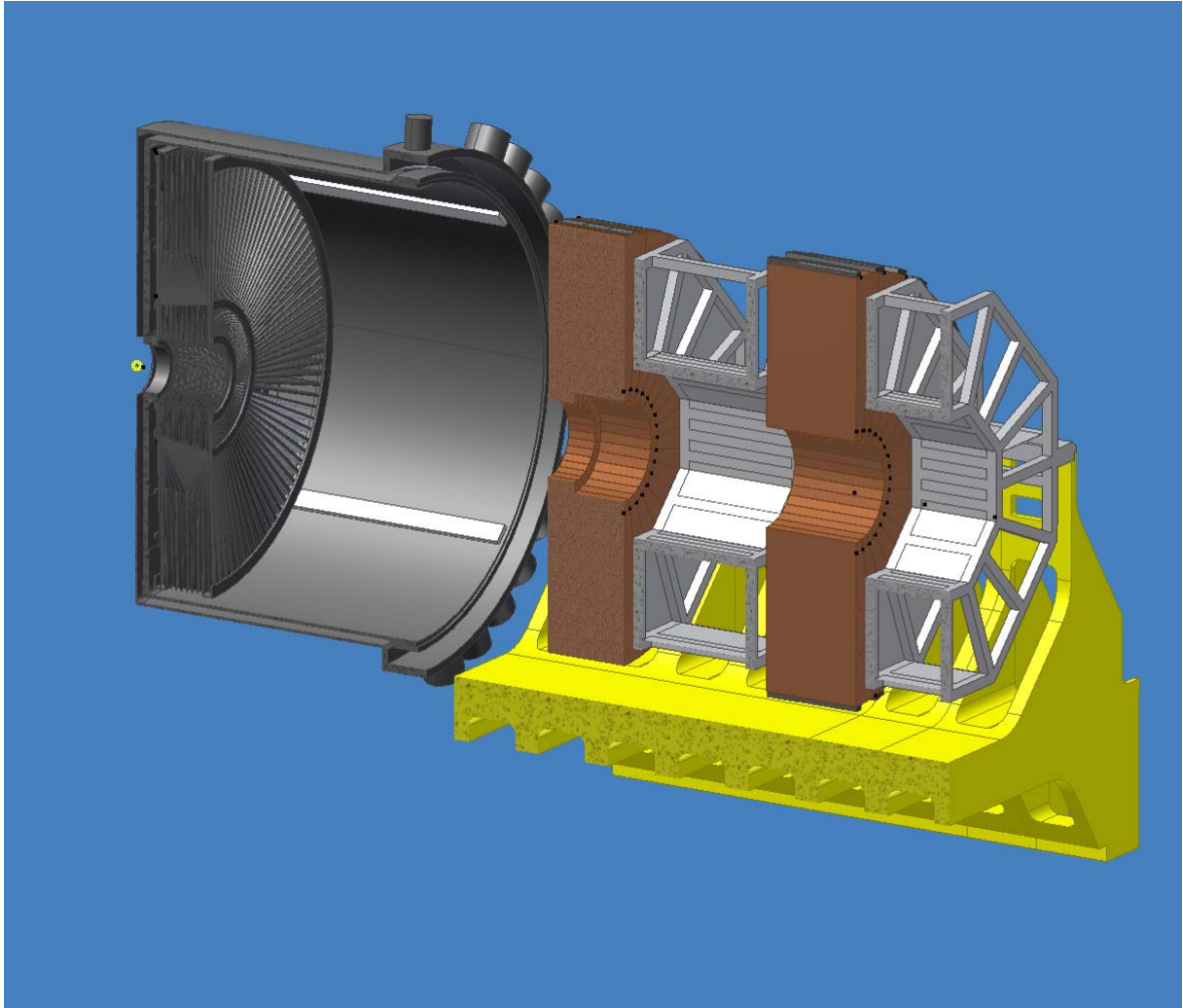
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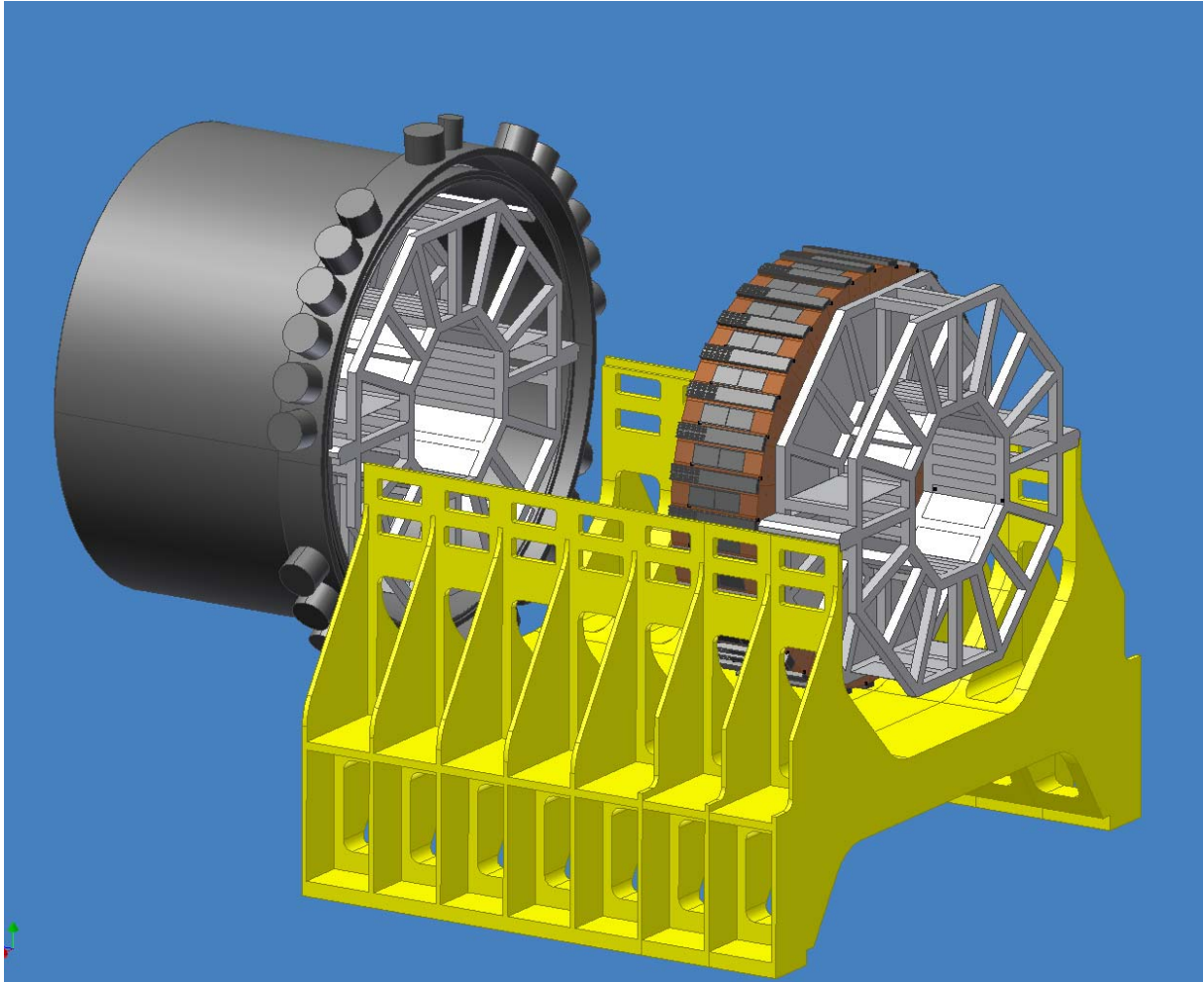
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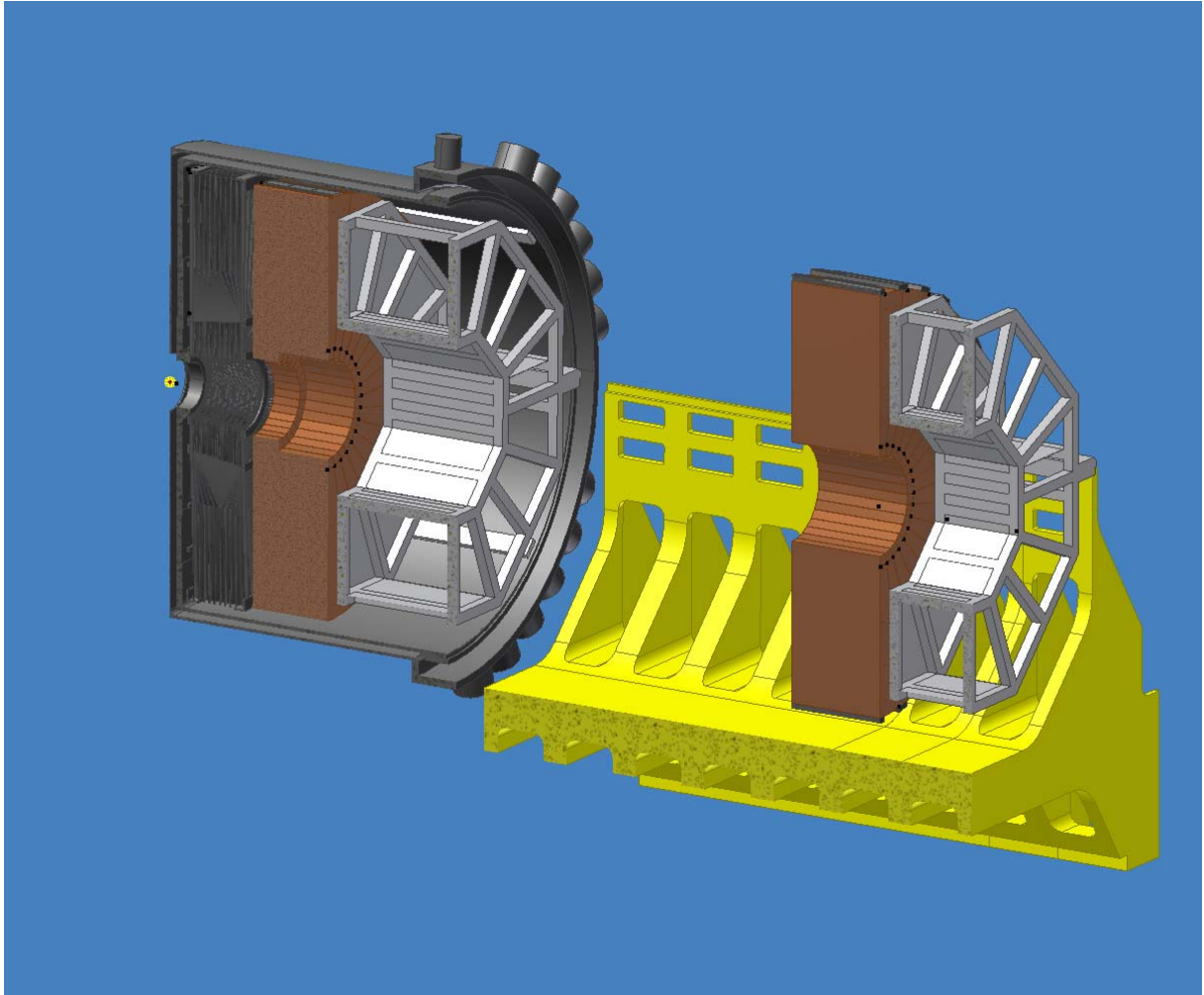
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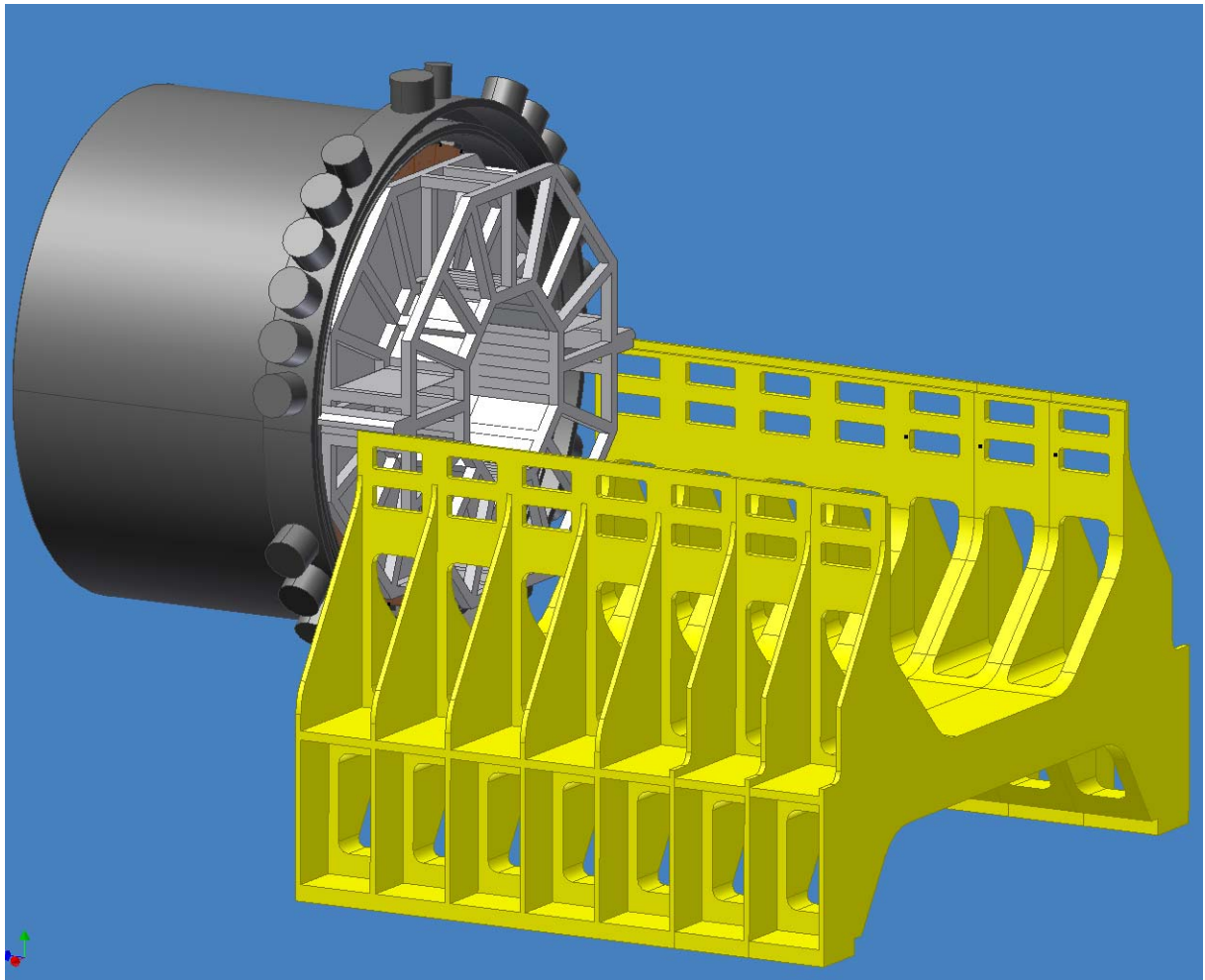
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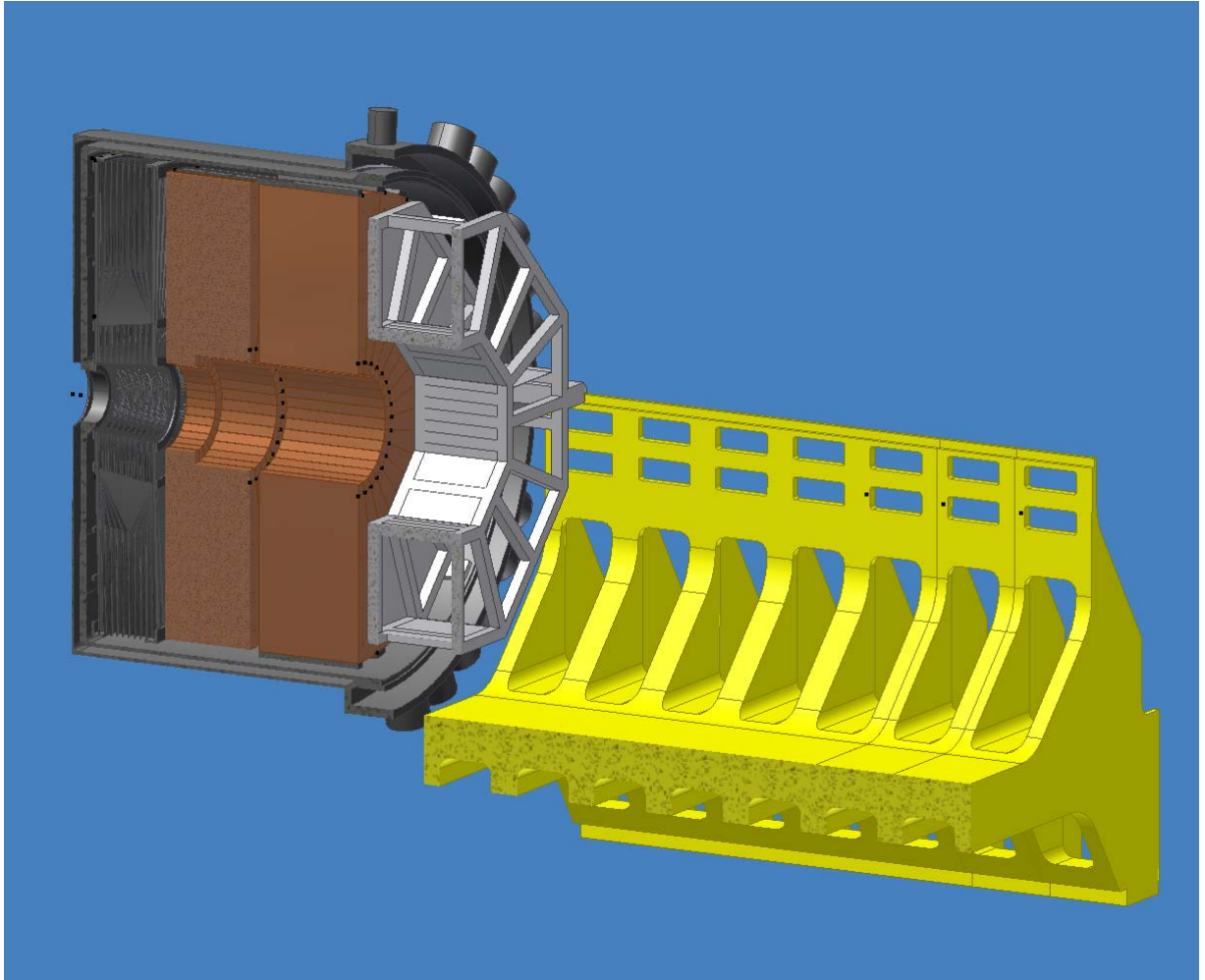
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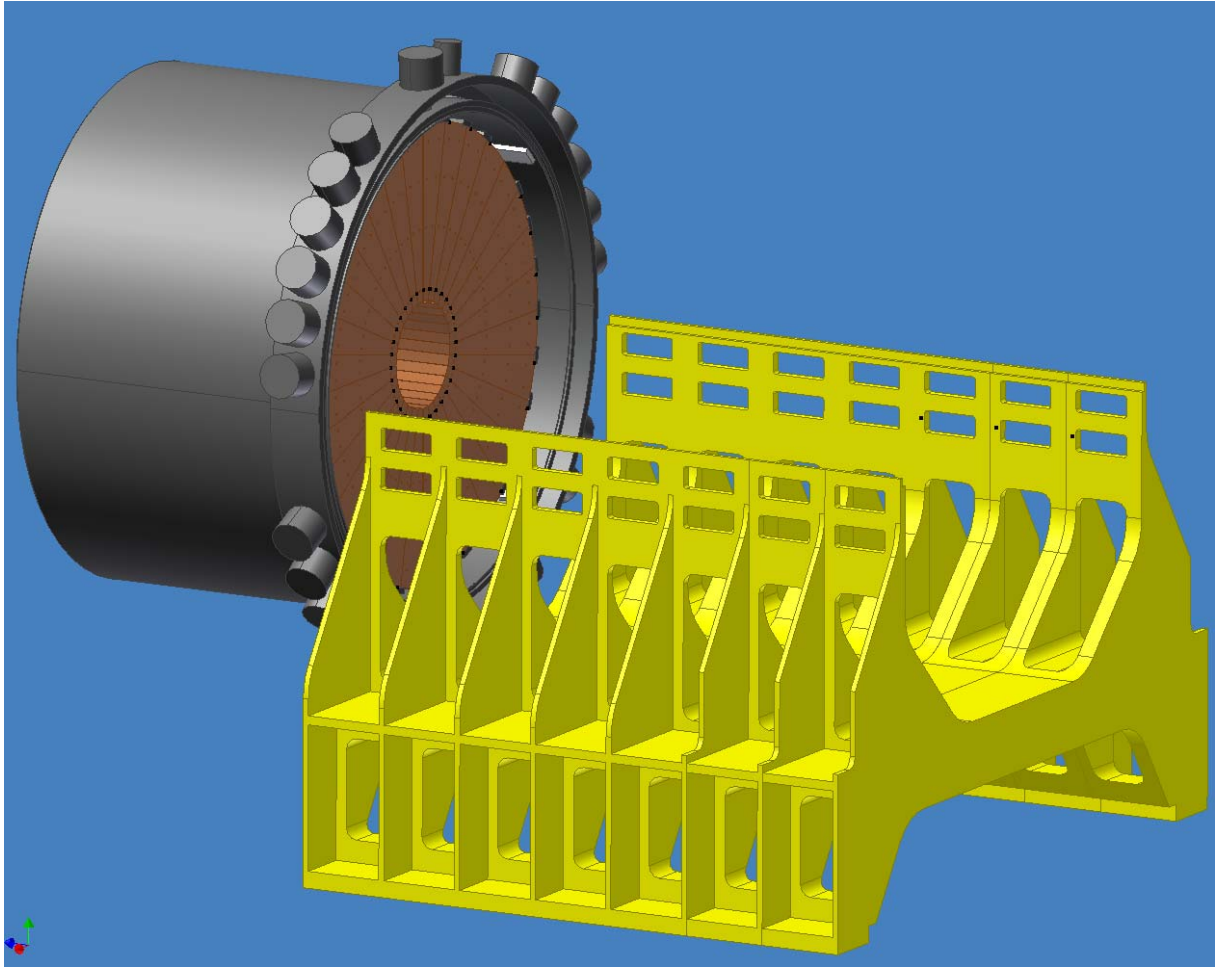
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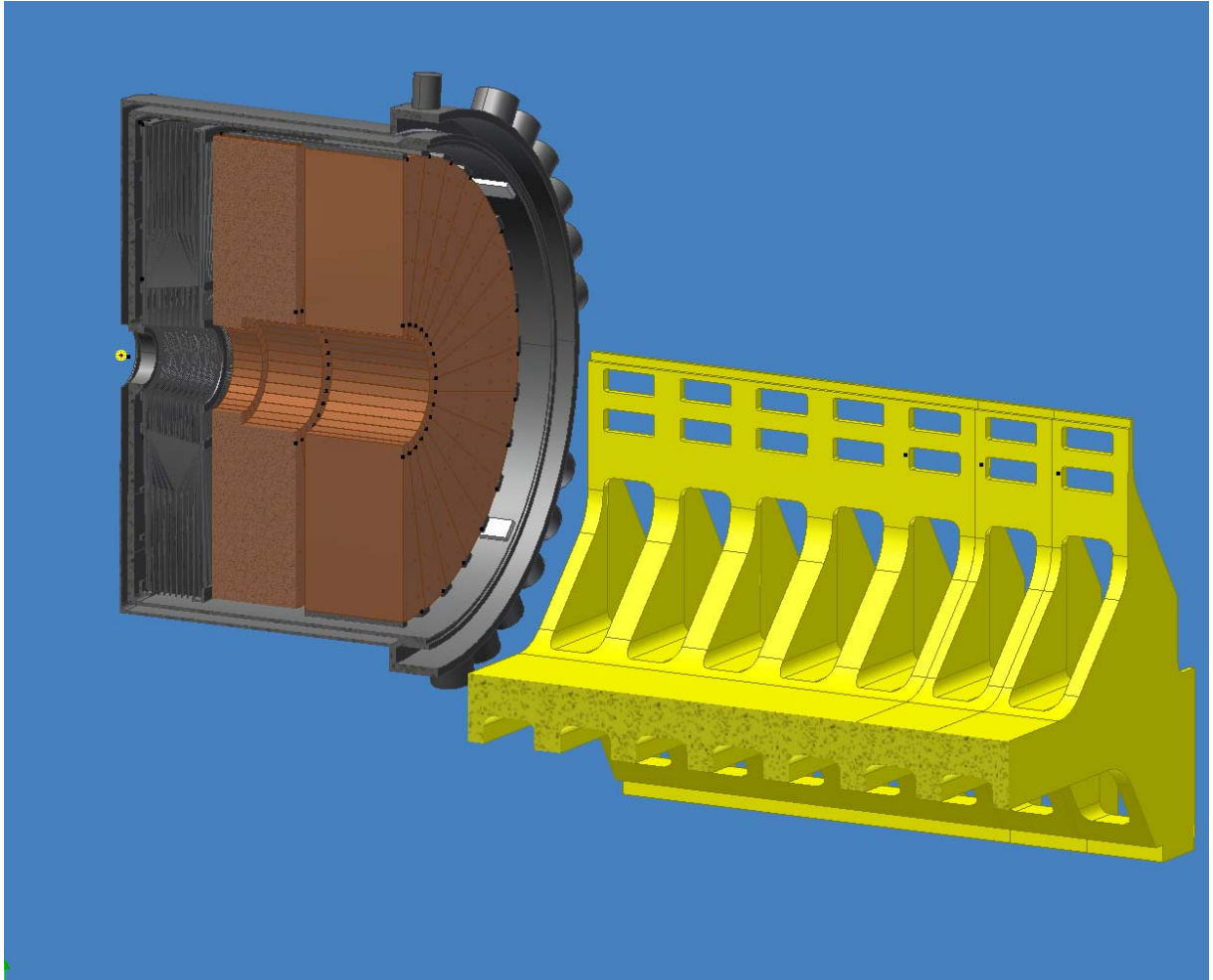
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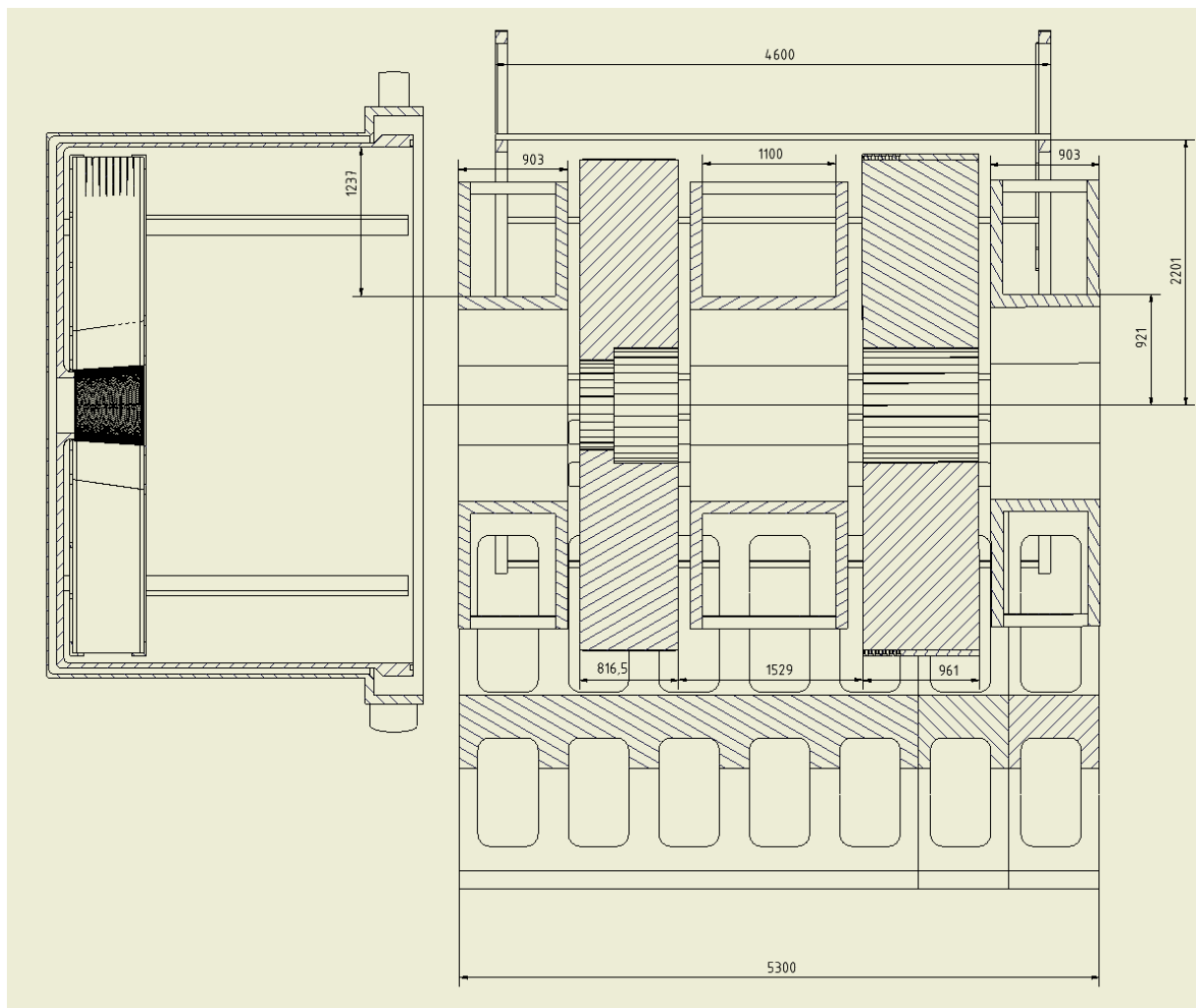
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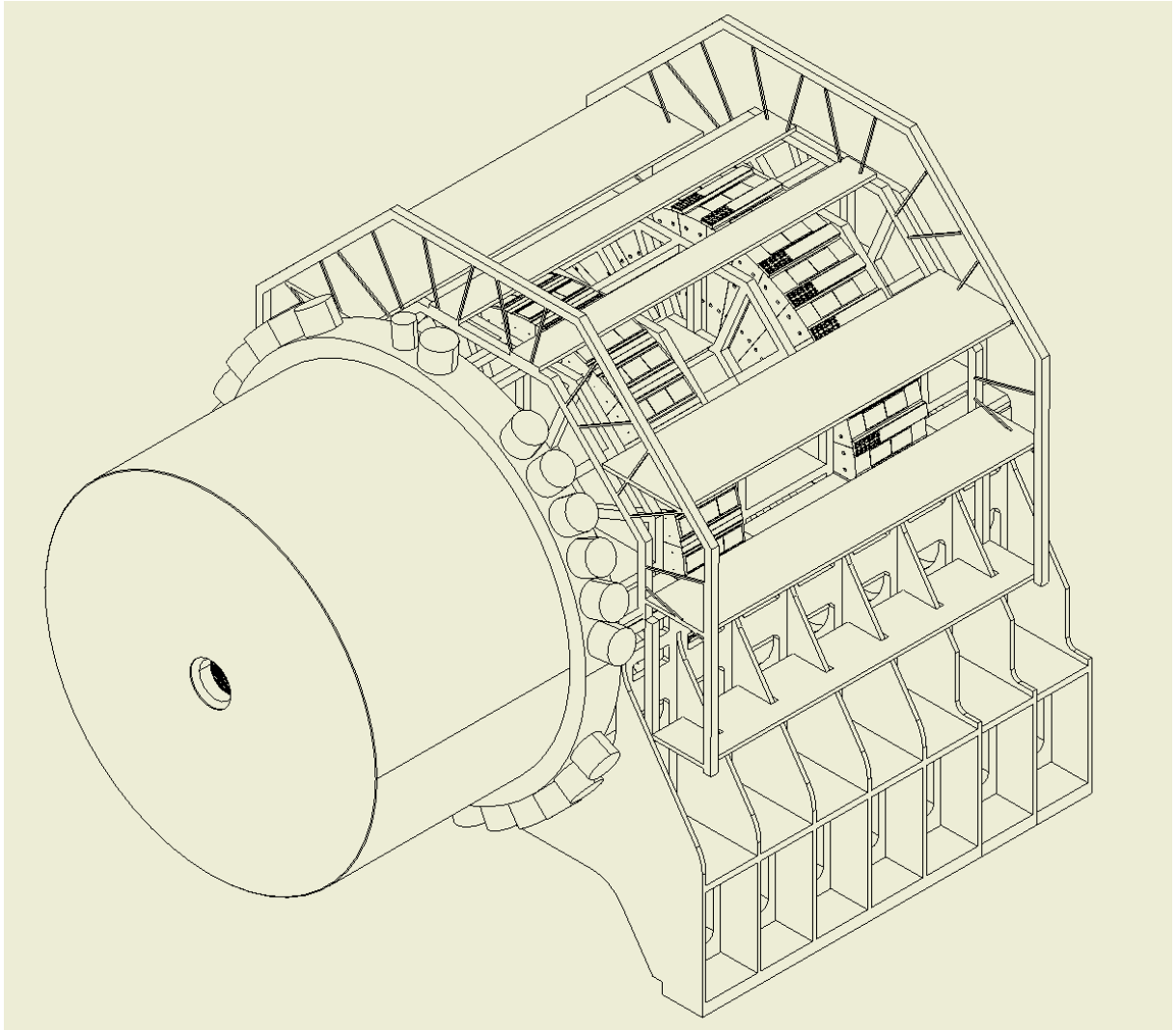
11A



11B



12A Abmaße ca.



12B