

SVT Mechanics Design

F.Bosi

Phone meeting 2.12.2011

Mechanics activity

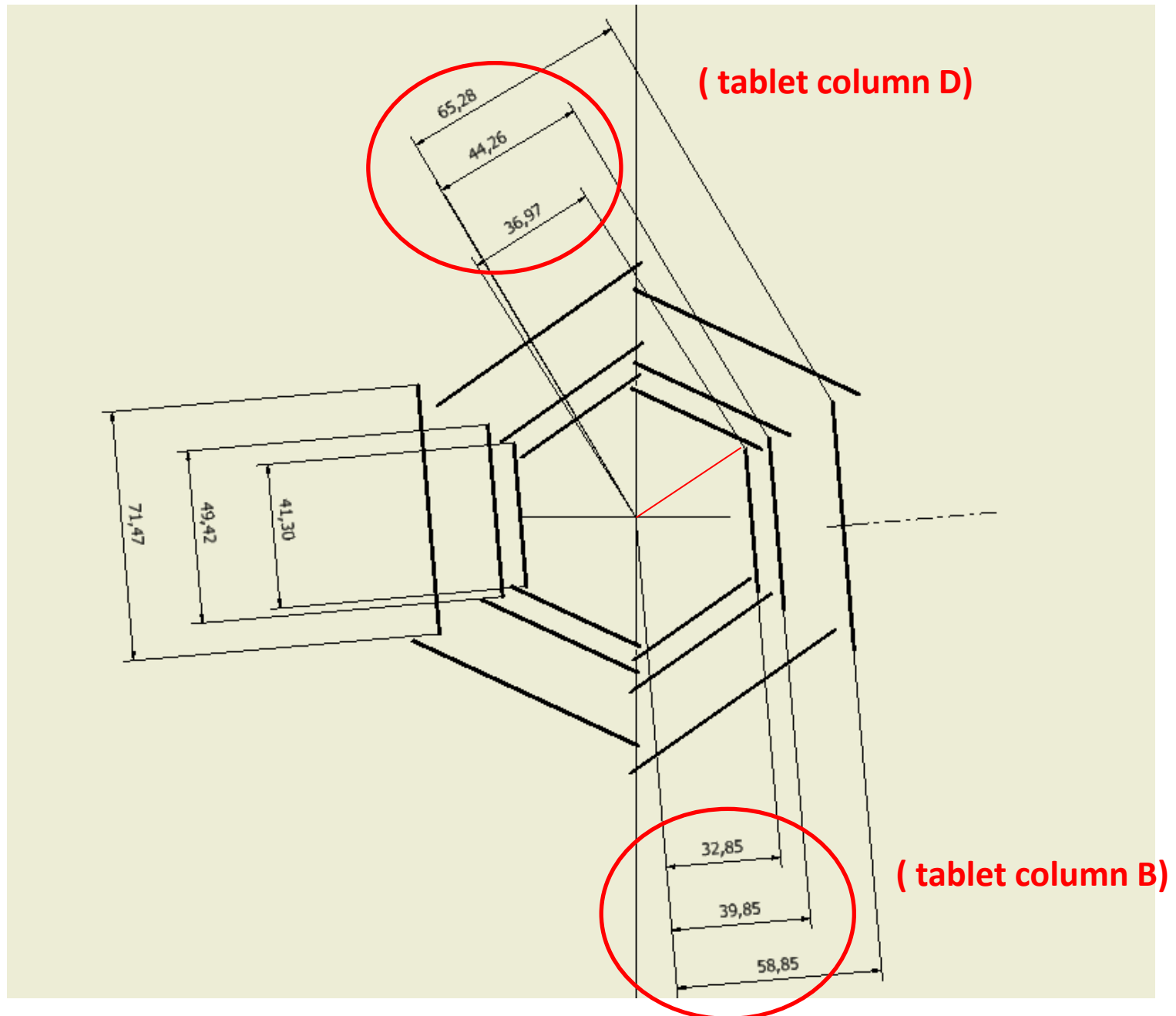
- L1-L5 silicon sensor dimension and geometry
 - sensors extension below 300 mrad
 - modules shift in Z to avoid central plane dead space
- Defined positions of cooling ring and gimbal ring
 - design with symmetric back/forward cooling ring
 - gimbal ring fixed on W shielding
- Special horizontal buttons on backward cone allow isostatic constrain
- HDI of L1L5 designed 3D with Babar dimensions
 - HDI L1-2 moved outer parallel z directions to avoid L0 conflict
 - Kapton flexible fanout longer: check signal/noise, occupancy
- Beam pipe design preliminary ready (Be/ criostat)
- I.R. Layout preliminary ready with all components

SVT sensor

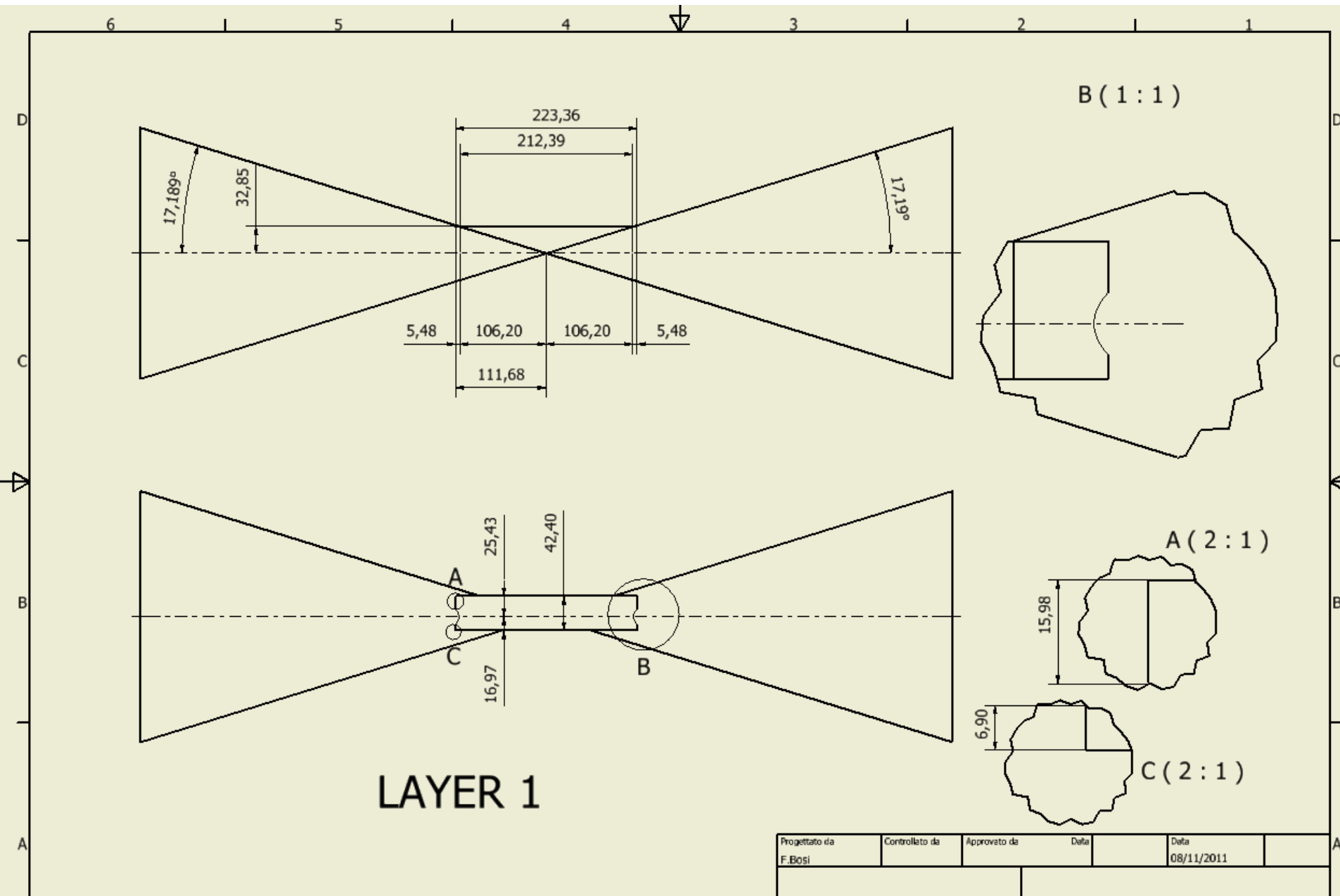
SVT - Dimensioni e copertura angolare sensori

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Layer	Radius piano y-z sensore barrel SuperB	Radius piano y-z punto estremo sensore wedge SuperB	Radius punto estremo laterale sensore SuperB	Lunghezza orizzontale sensore tangente cono 300 mrad SuperB	Lunghezza sensore barrel SuperB (tabella Londra)	Lunghezza totale sensore barrel SuperB	Lunghezza totale sensore SuperB	Lunghezza estensione sensore oltre 300 mrad SuperB column (G-E)/2	Lunghezza estensione sensore oltre 350 mrad BaBar	Angolo intercettato nel punto ingombro estremo sensore con piano y-z (rad)	Angolo intercettato nel punto ingombro estremo laterale sensore (rad)	Shift Layer asse Z (mm)	Angolo intercettato nel punto ingombro estremo sensore con piano y-z+shift (rad)	Angolo intercettato ingombro fisico sensore estremo laterale +shift (rad)
0	15,10	-	17,30	97,63	-	104,00	104,00	3,19	-	0,283	0,321	0	-	-
1	32,85	-	36,97	212,39	214,78	223,36	223,36	5,48	21,69	0,286	0,320	+2	0,284	0,325
2	39,85	-	44,26	257,65	262,78	265,78	265,78	4,06	2,51	0,291	0,322	-2	0,293	0,326
3	58,85	-	65,28	380,49	385,70	385,70	385,70	2,60	1,41	0,296	0,326	0	-	-
4A	119,85	87,91	90,54	574,60	457,95	457,95	578,23	2,05	1,96	0,295	0,303	+2	0,293	0,293
4B	123,85	91,91	94,42	597,69	479,42	479,42	599,70	1,14	1,07	0,297	0,305	+2	0,296	0,296
5A	139,85	112,18	114,25	732,47	613,04	613,04	737,46	2,72	2,58	0,295	0,300	-2	0,297	0,297
5B	143,85	116,18	118,18	756,53	635,84	635,84	760,26	2,05	1,93	0,297	0,301	-2	0,298	0,298

Layer 1-2-3 module radius

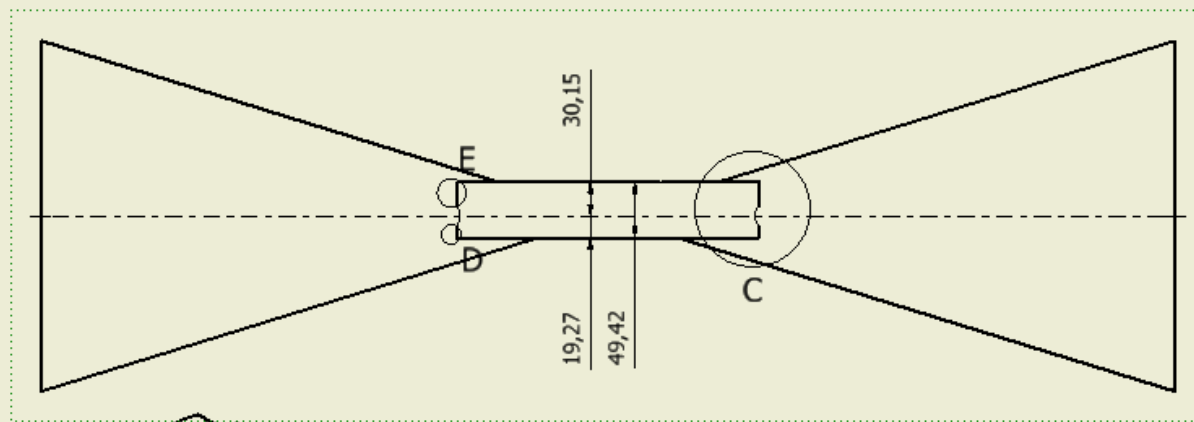
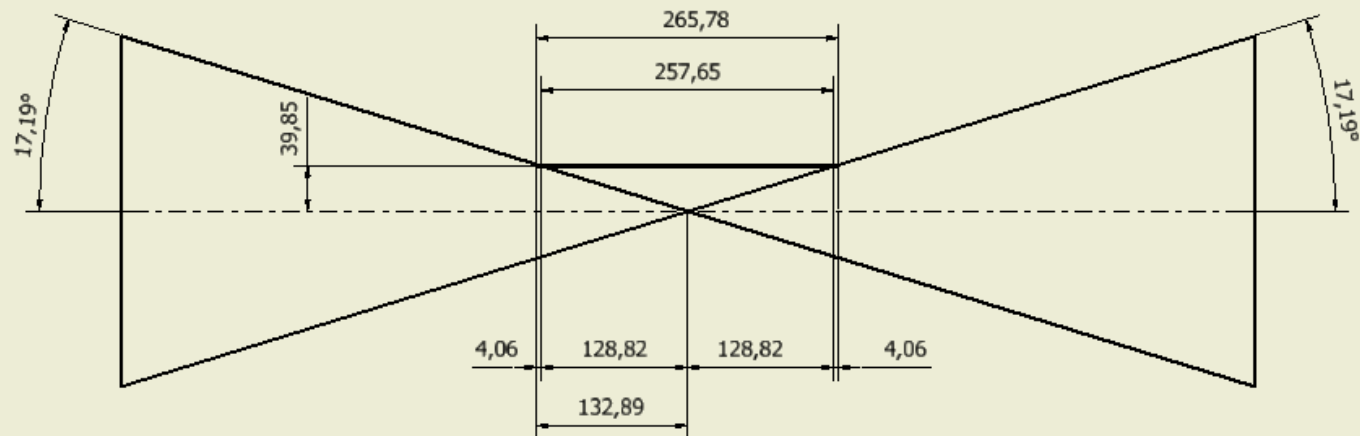


Layer 1 module



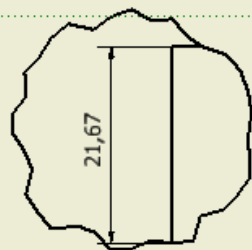
Progettato da	Controllato da	Approvato da	Data	Data	
F.Bosi			08/11/2011		

Layer 2 module

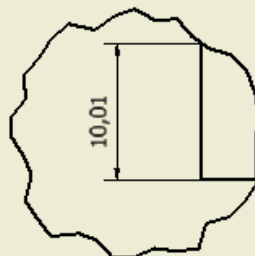


LAYER 2

E(2:1)

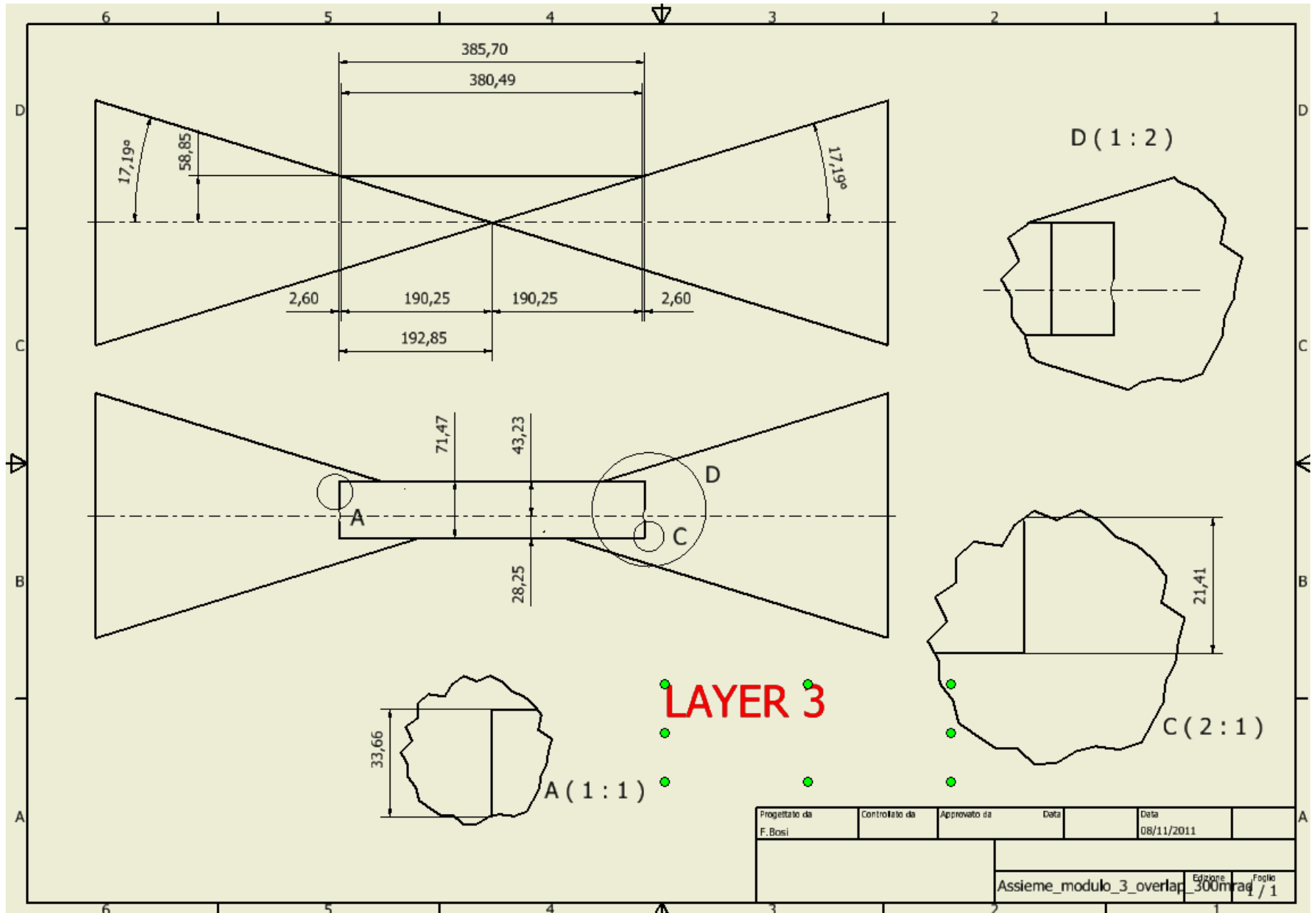


D(3:1)

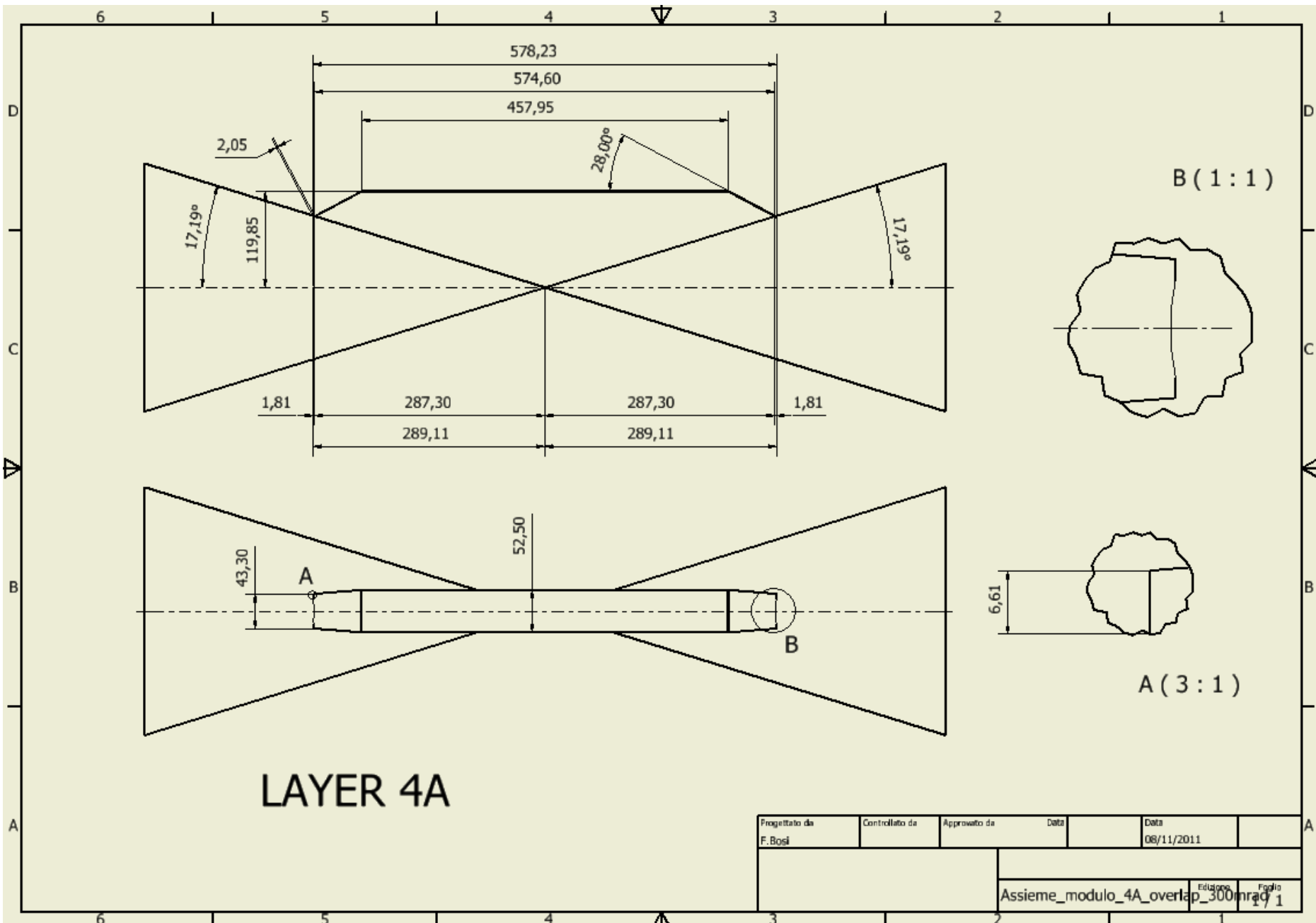


Progettato da F.Bosi	Controllato da	Approvato da	Data 18/11/2011	
Assieme_modulo_2_overlap_300mm				Edizione 1

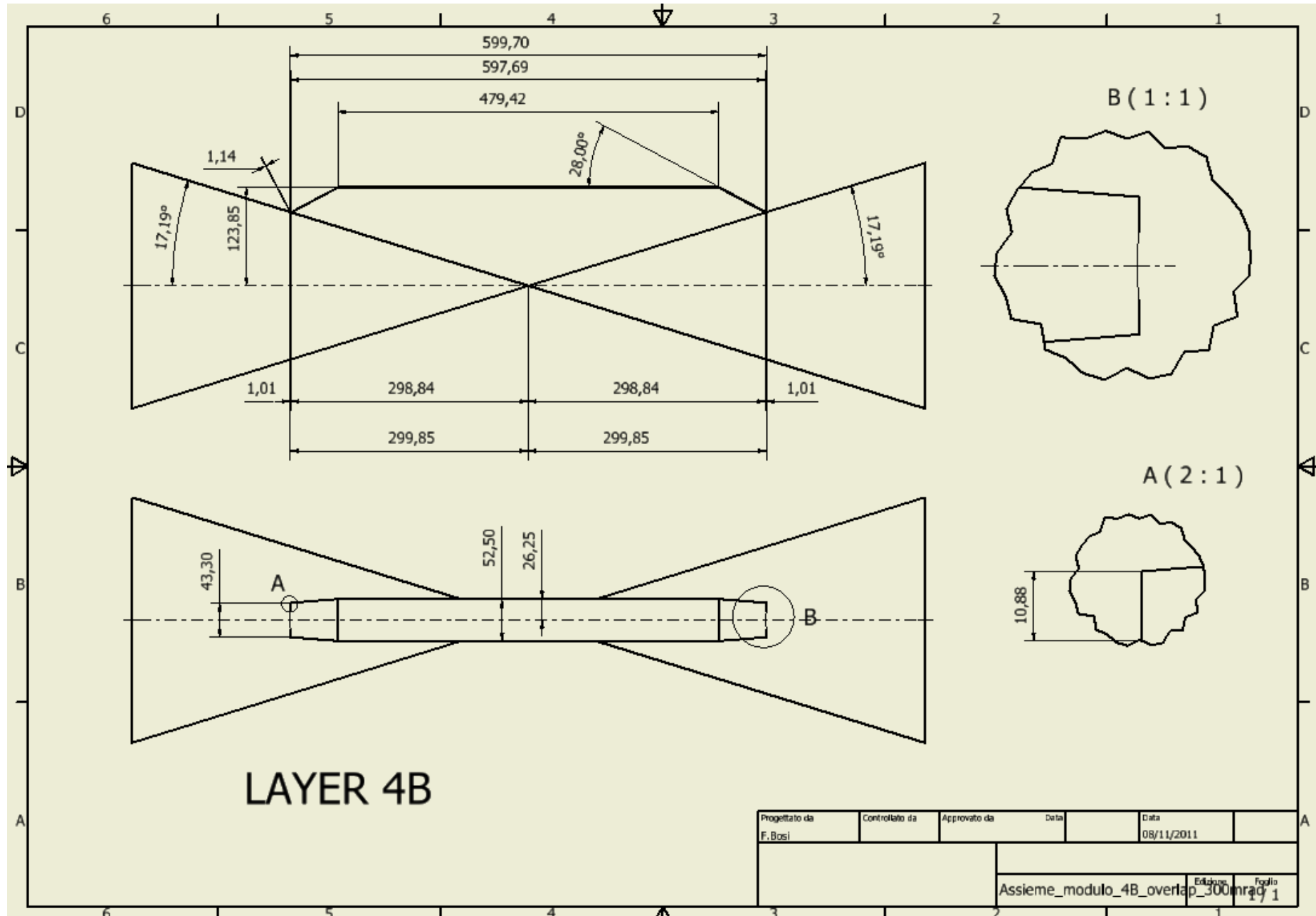
Layer 3 module



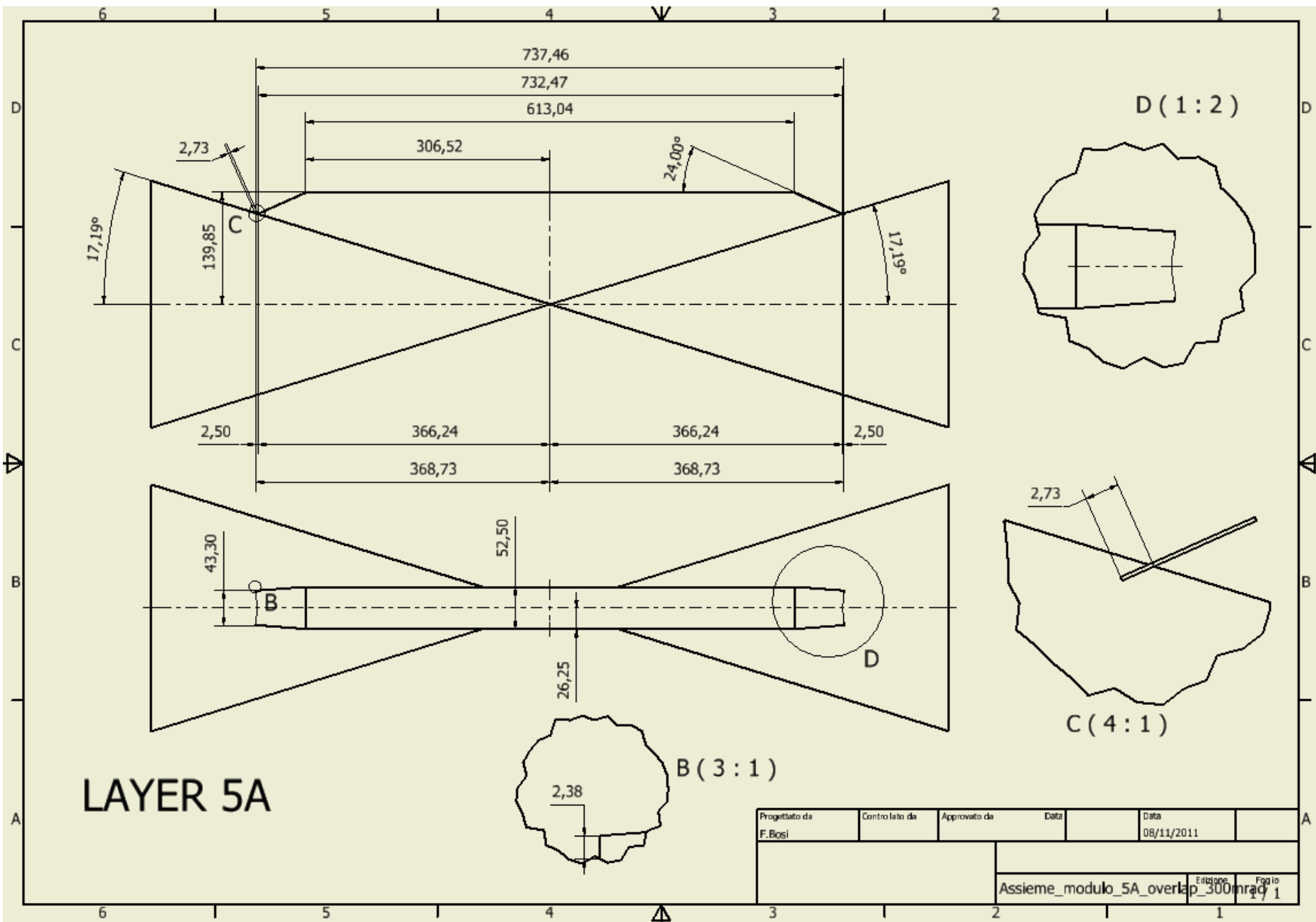
Layer 4 A module



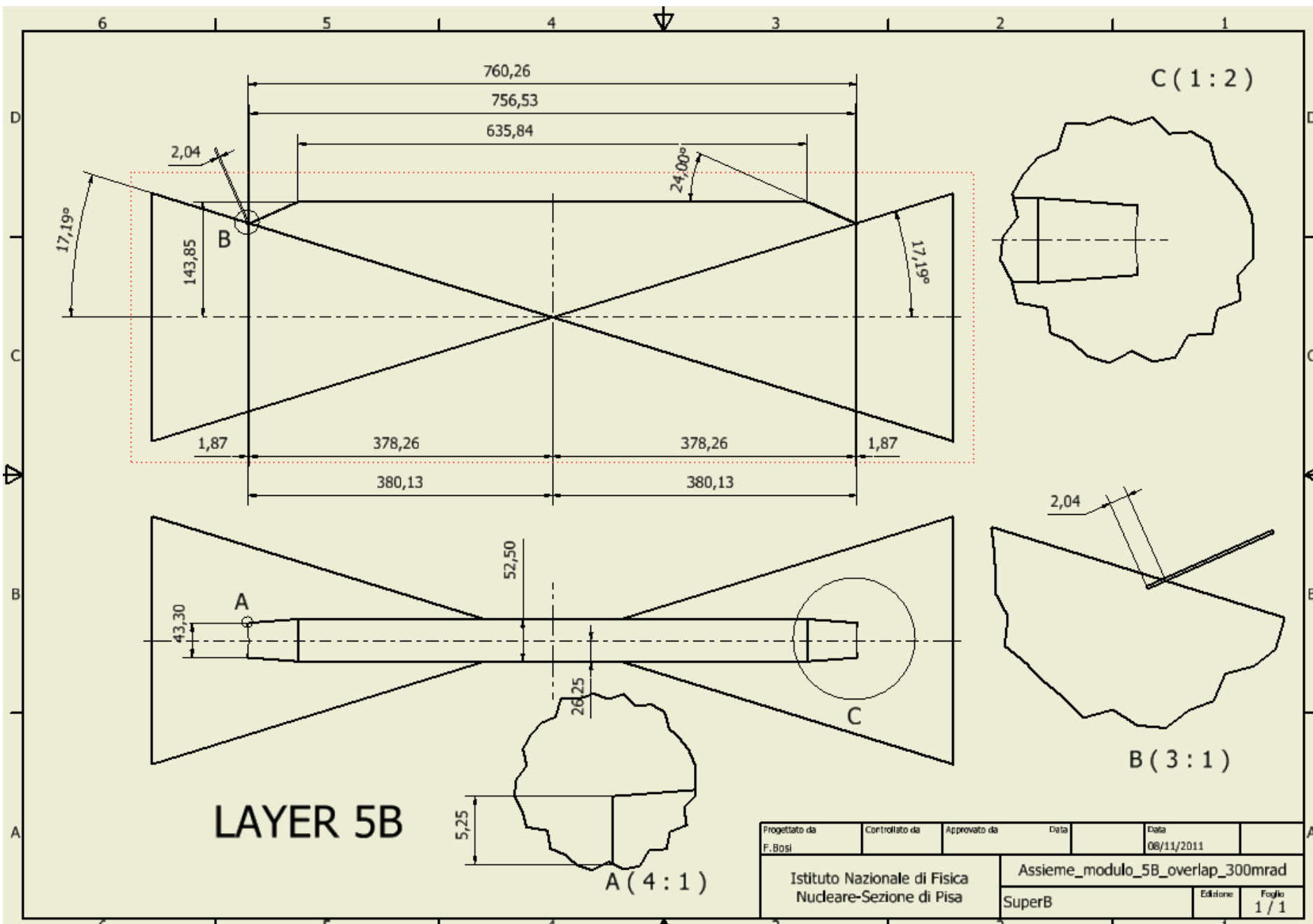
L4 B module



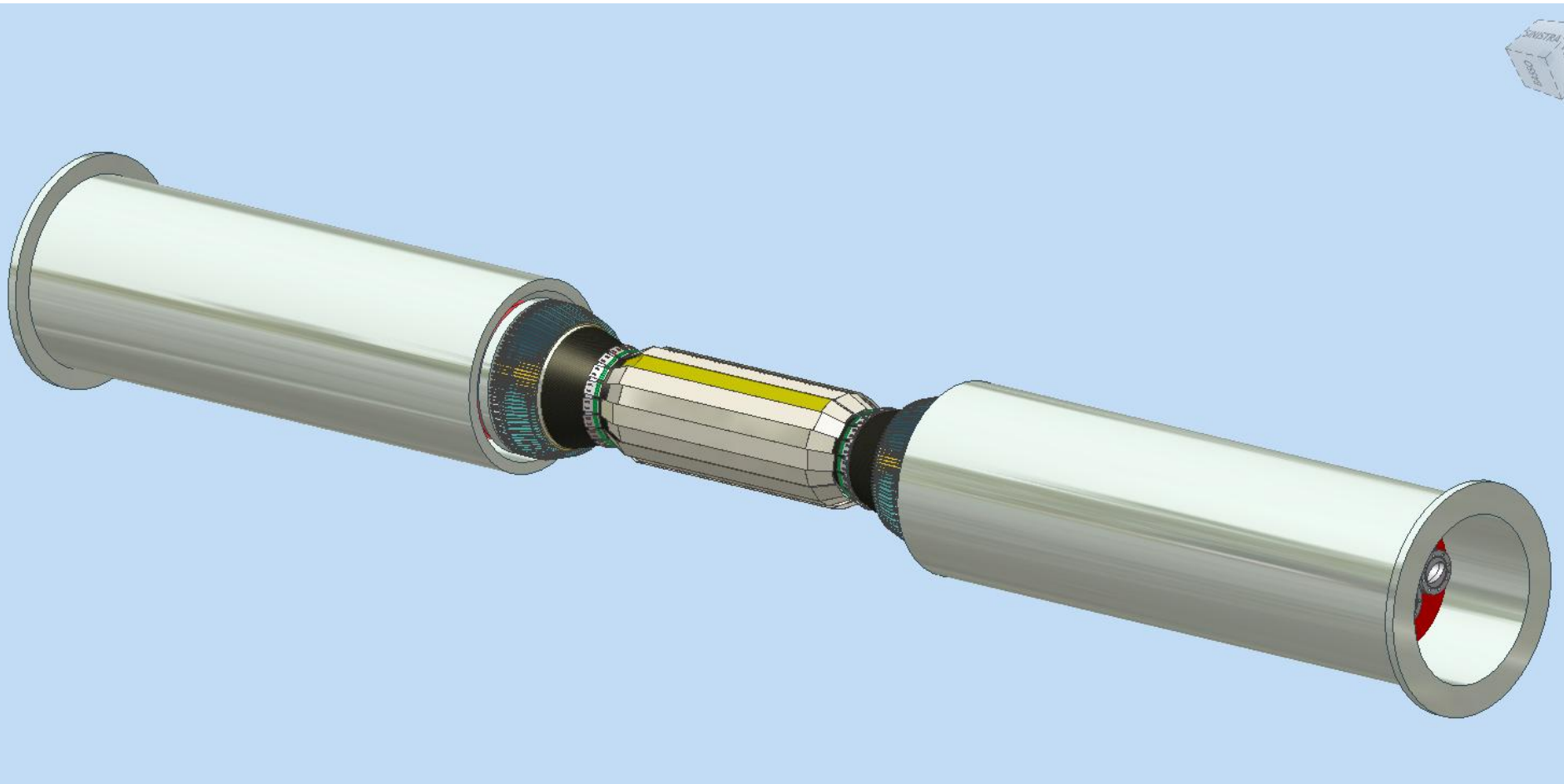
Layer 5 A module



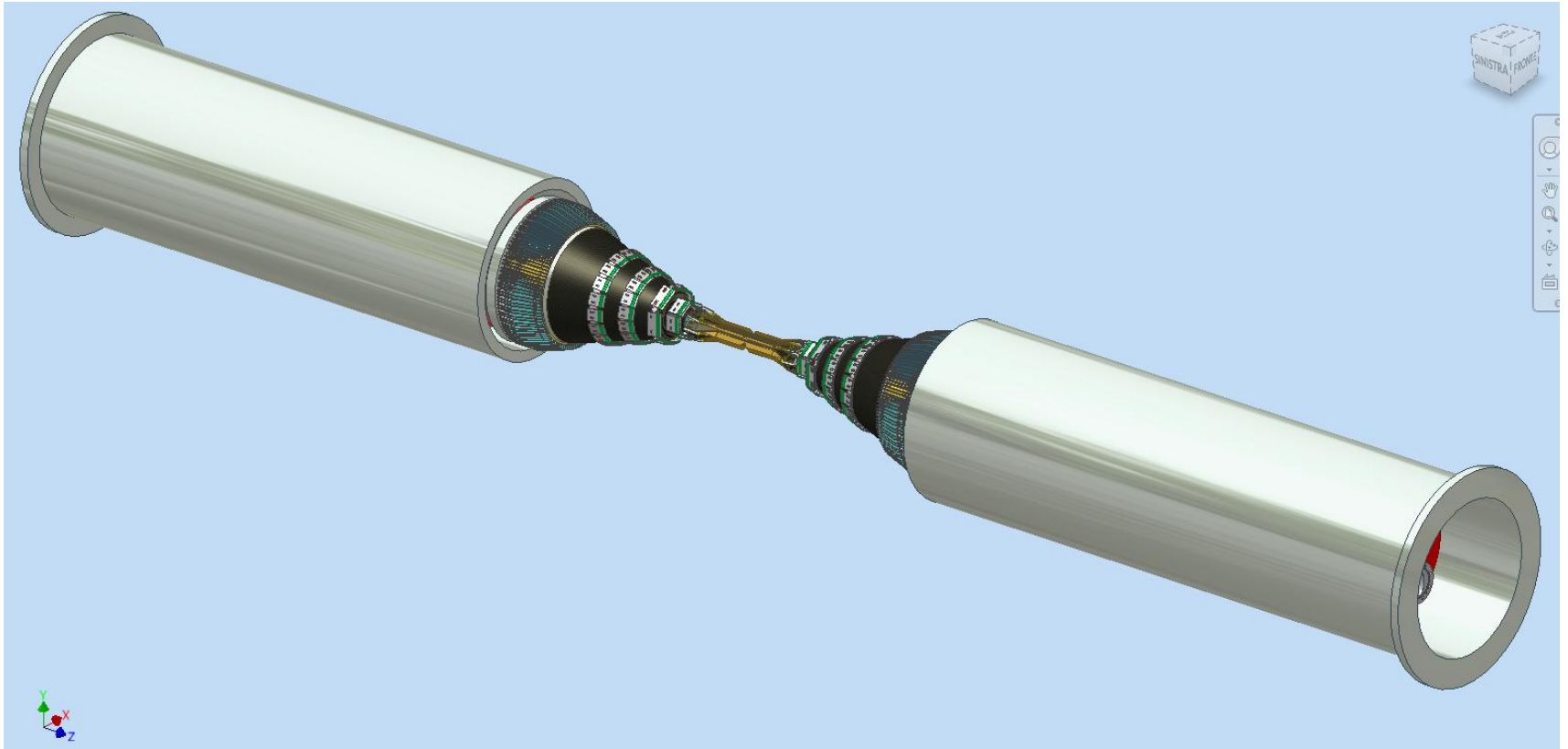
Layer 5 B module



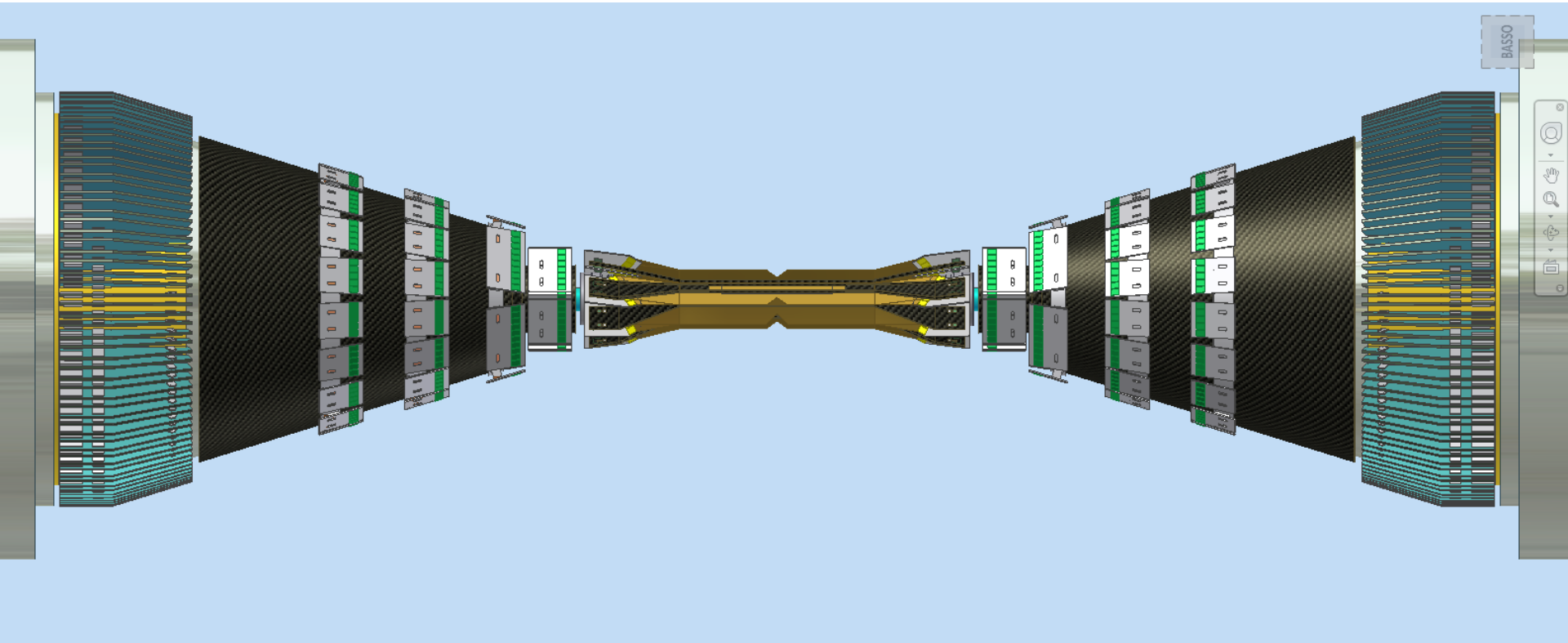
I.R. Layout



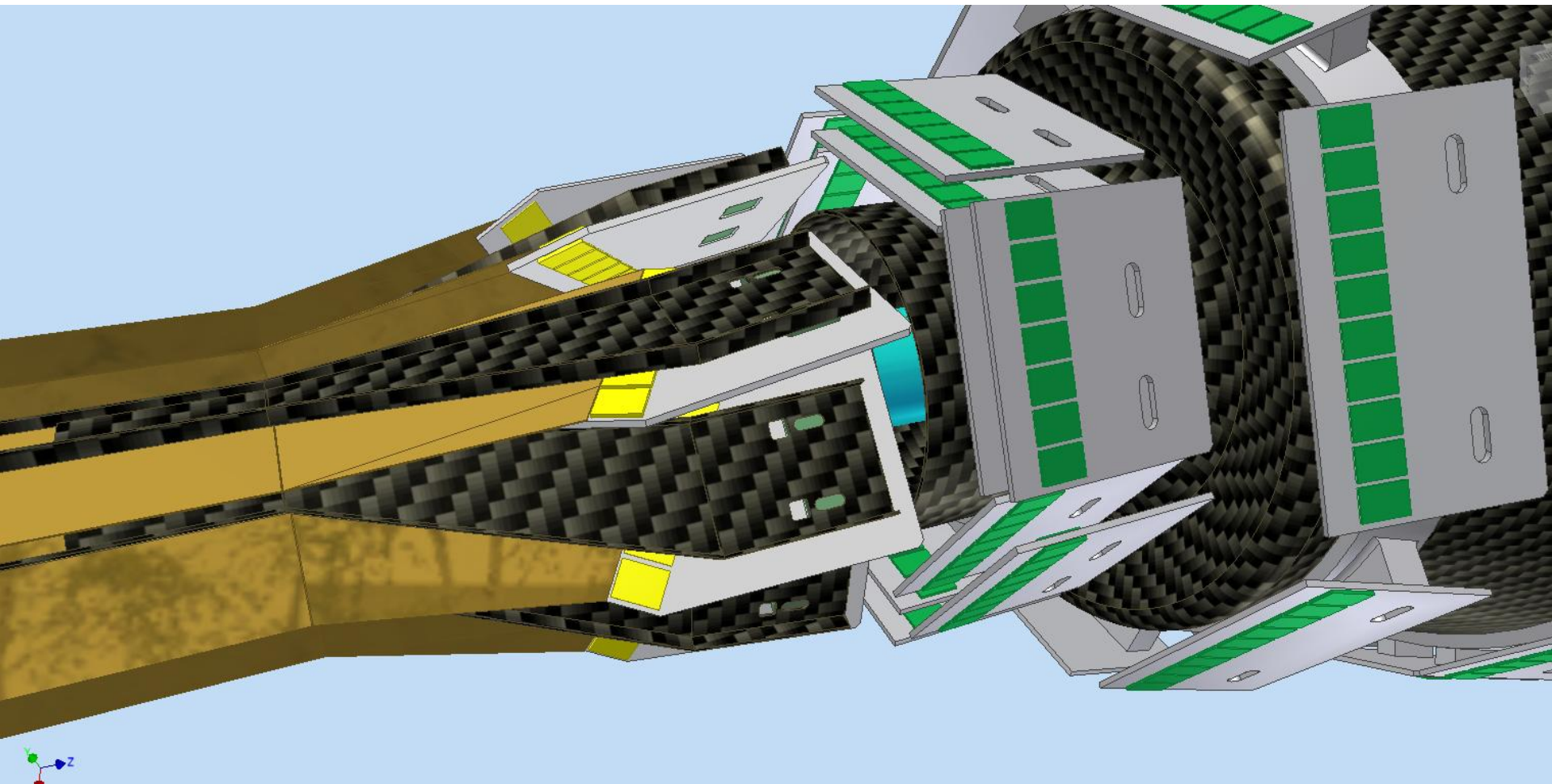
I.R. Layout

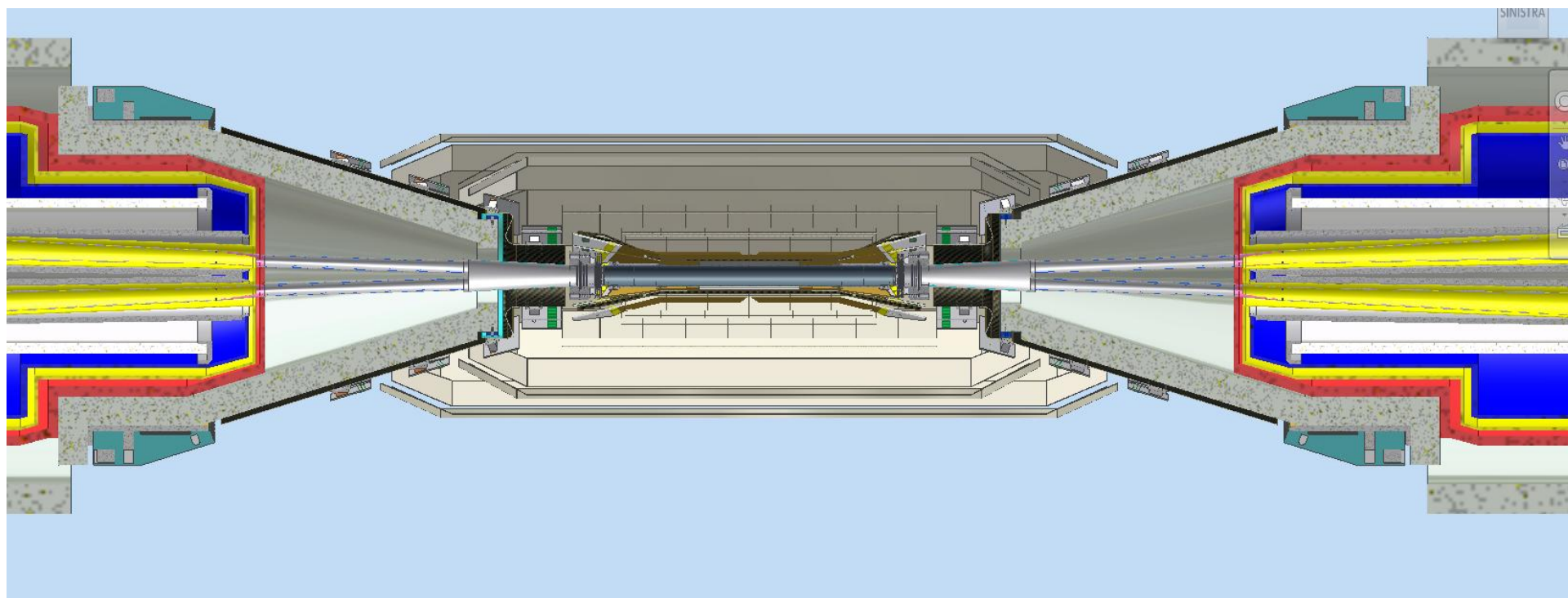


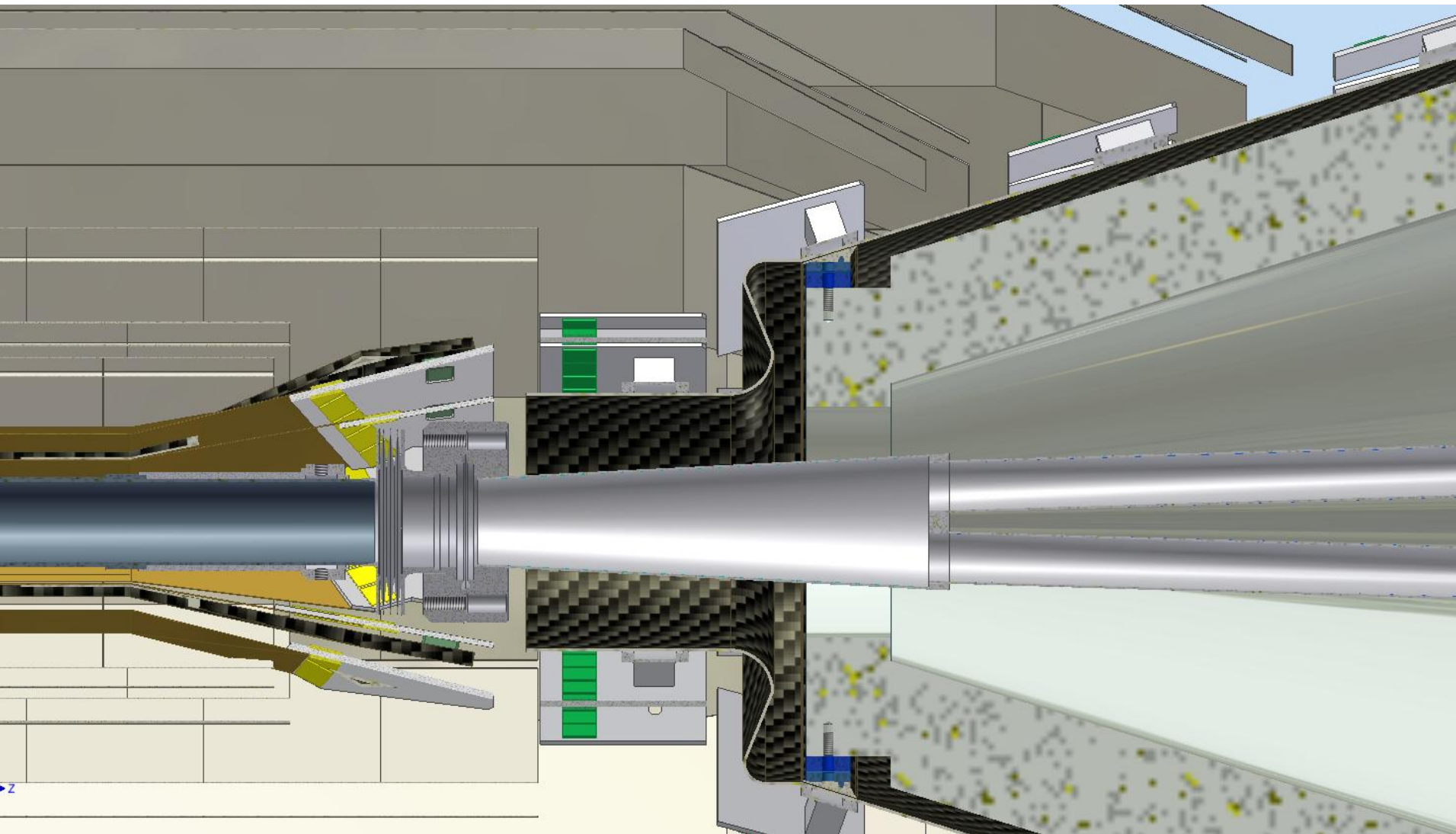
SVT sensor



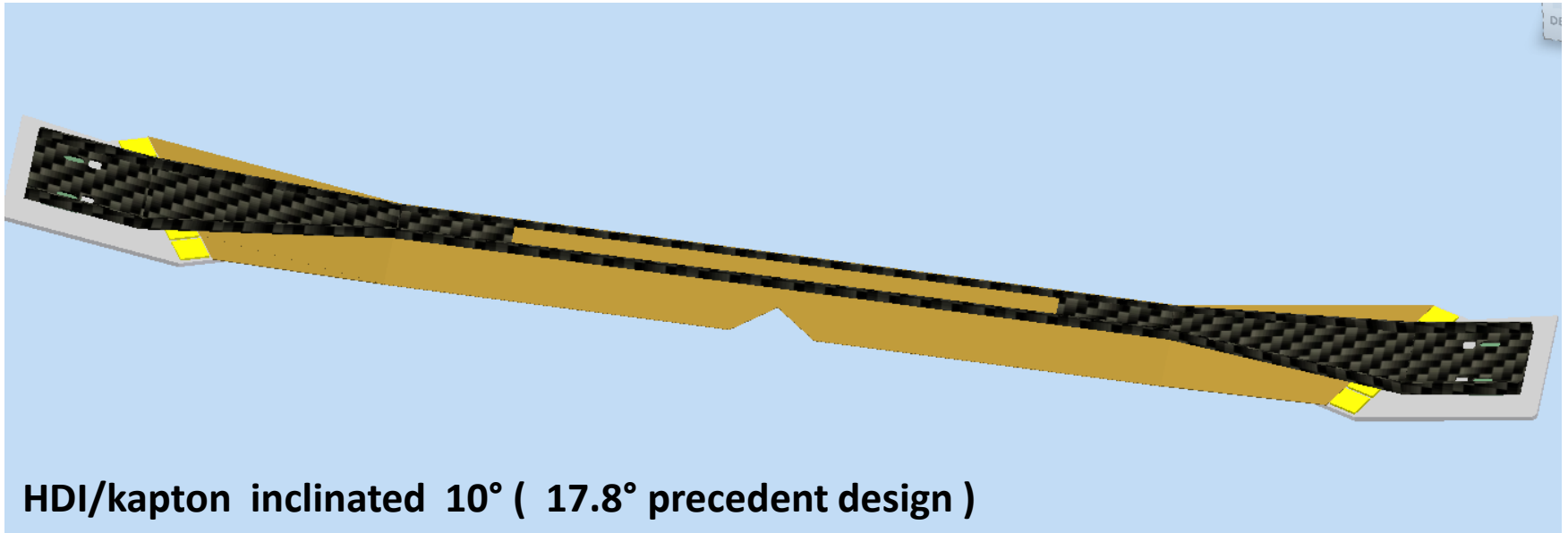
SVT sensor





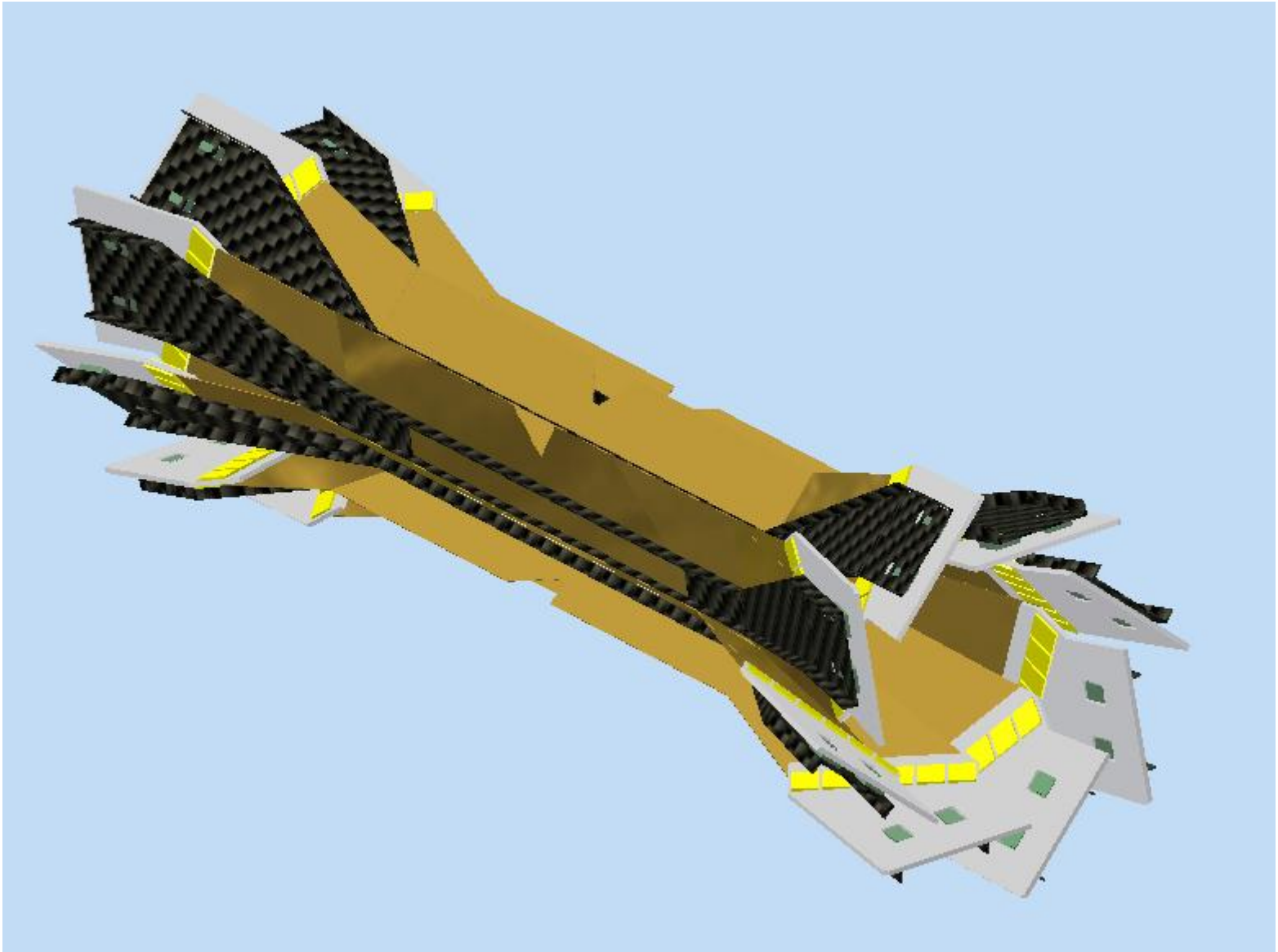


New L0 stripsets design

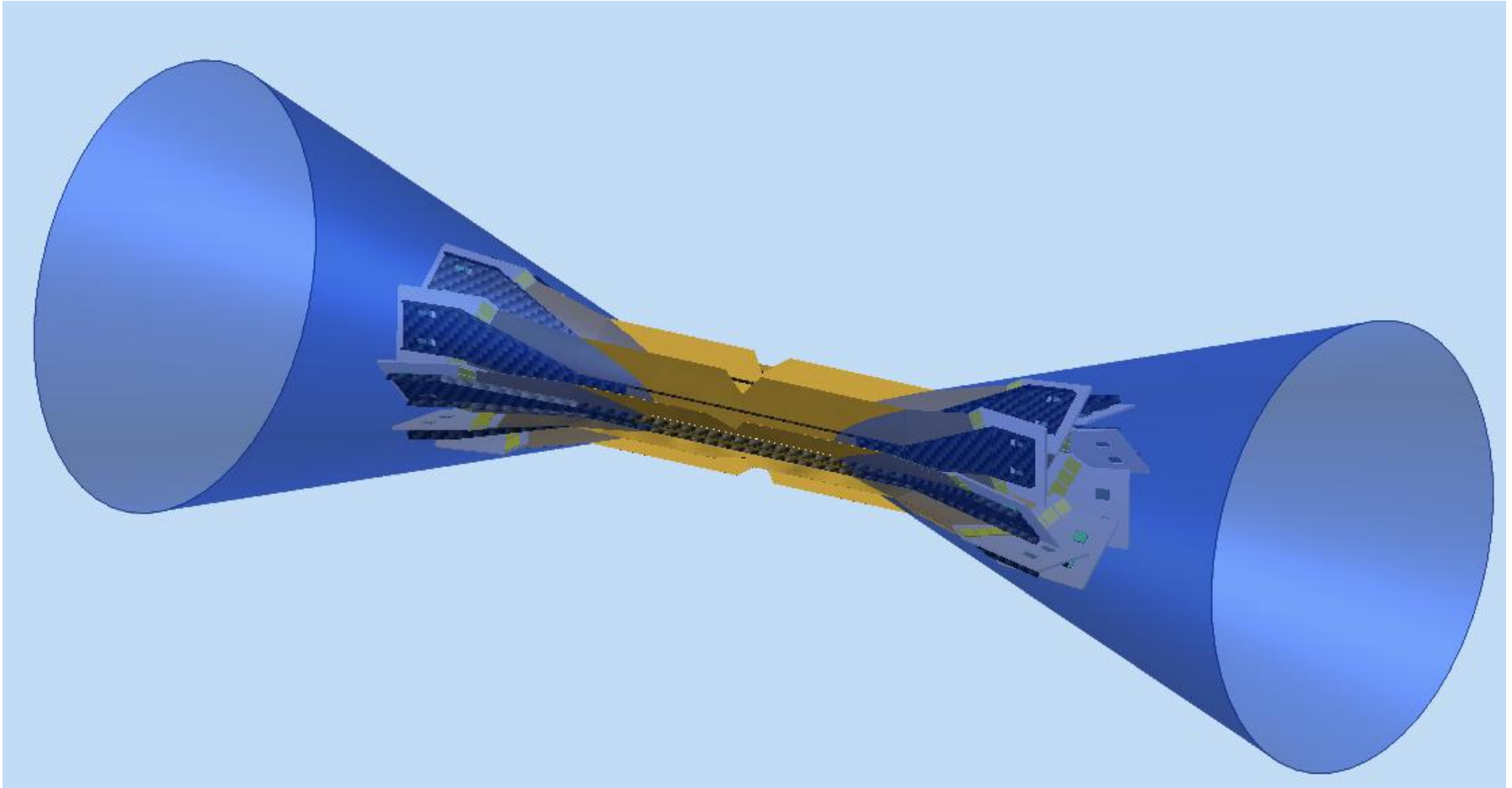


Si sensor :
W=13.9 mm
L=104 mm
R=15 mm

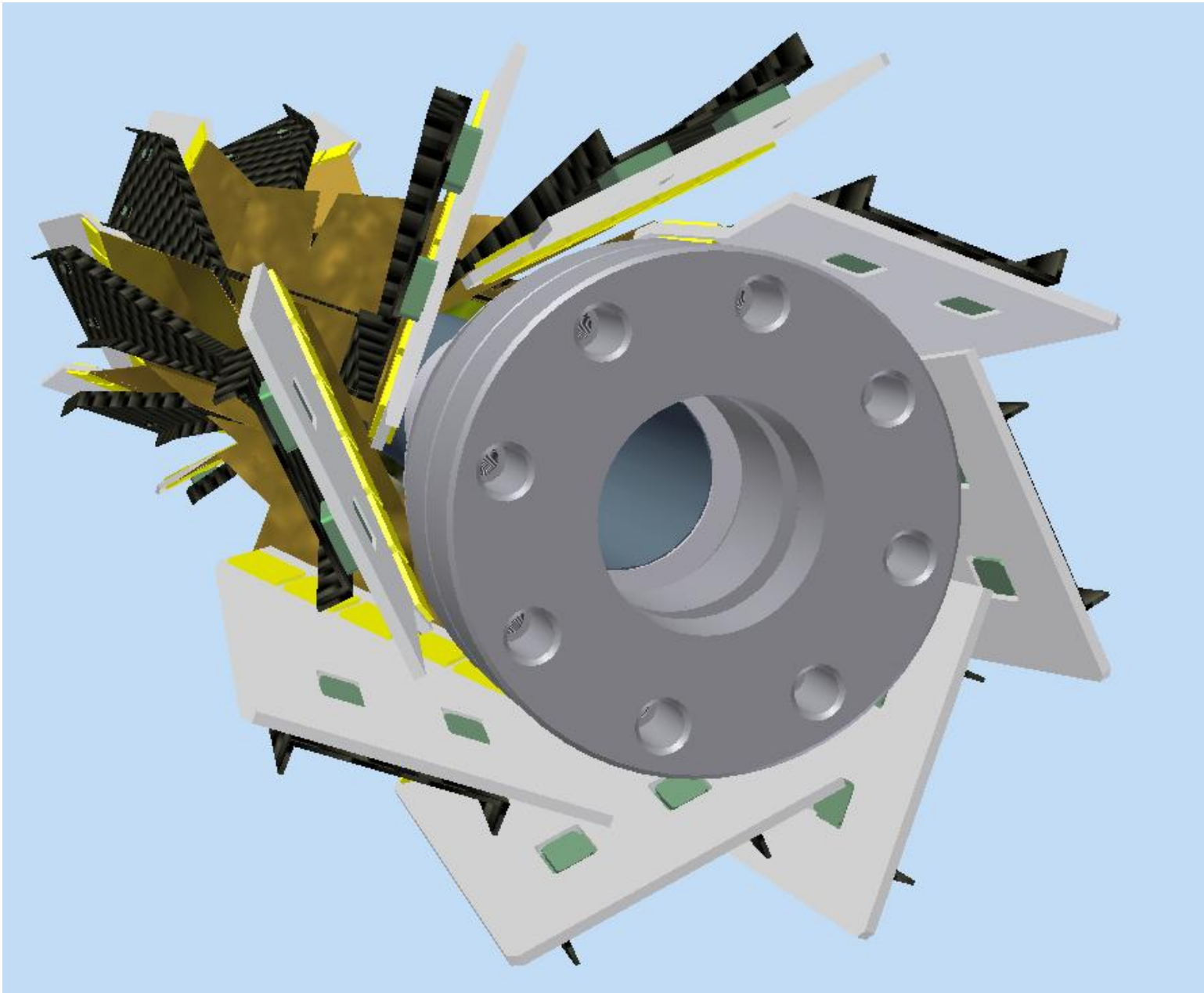
New L0 stripsets design



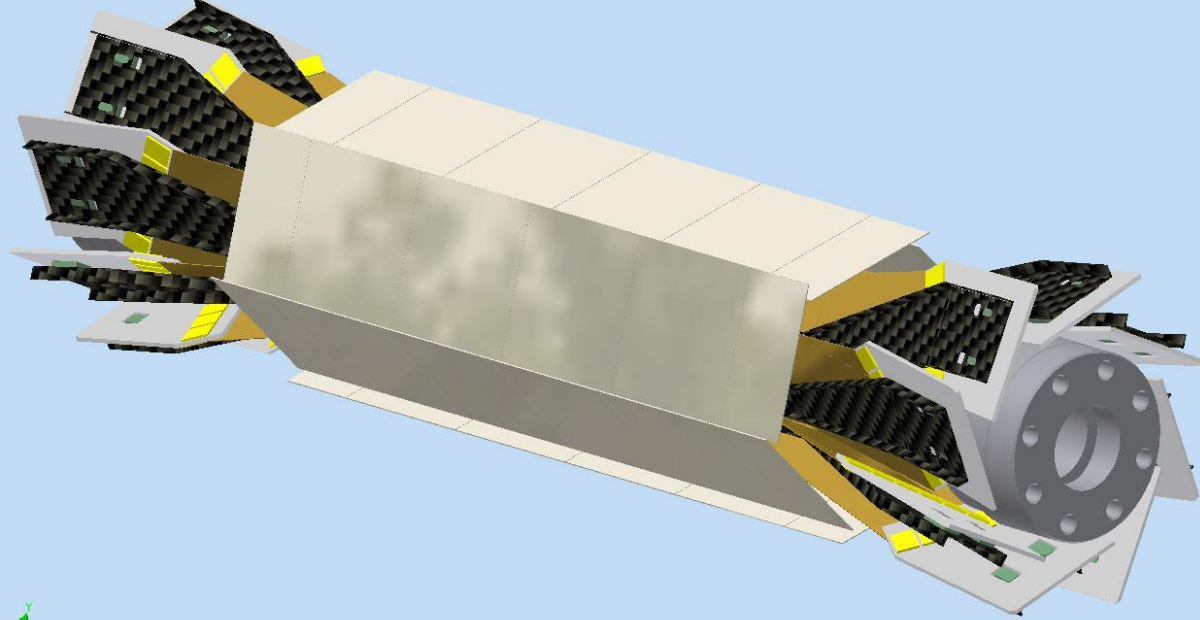
L0 striplets design



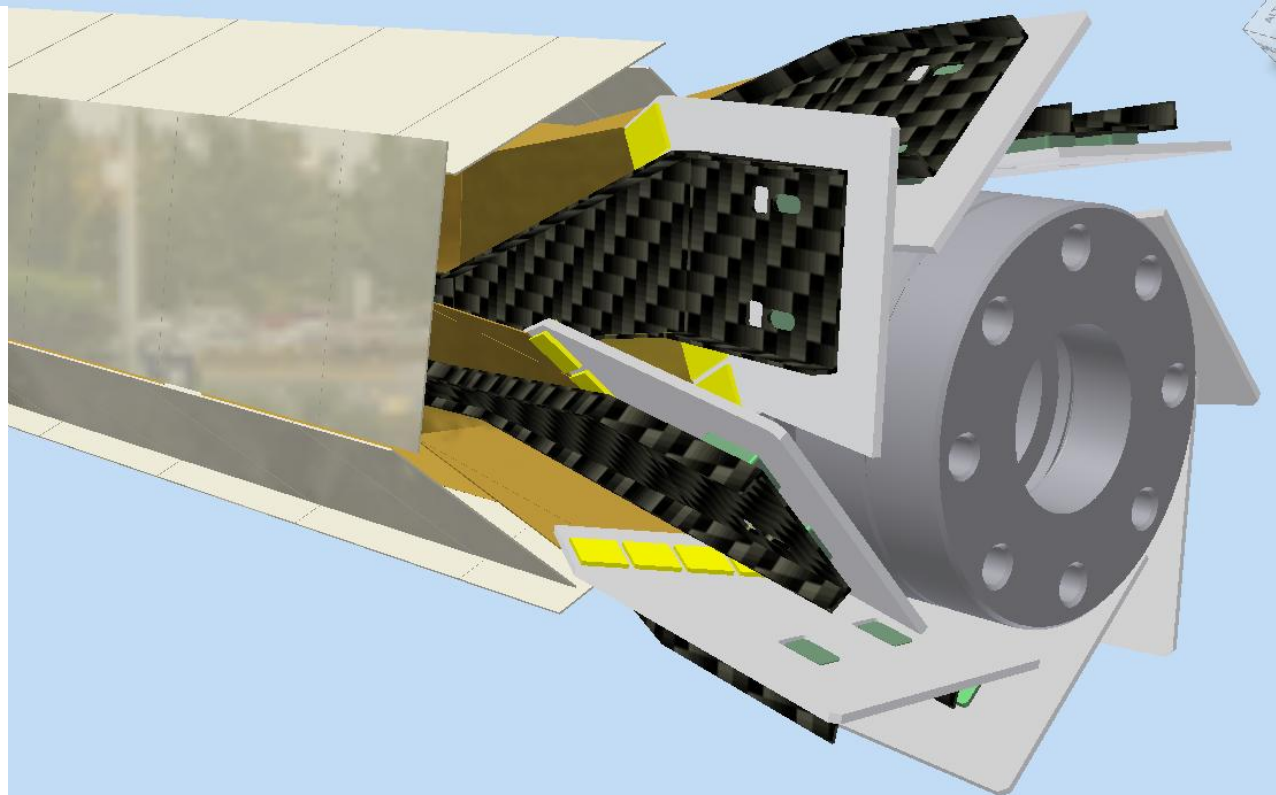
L0 striplets design



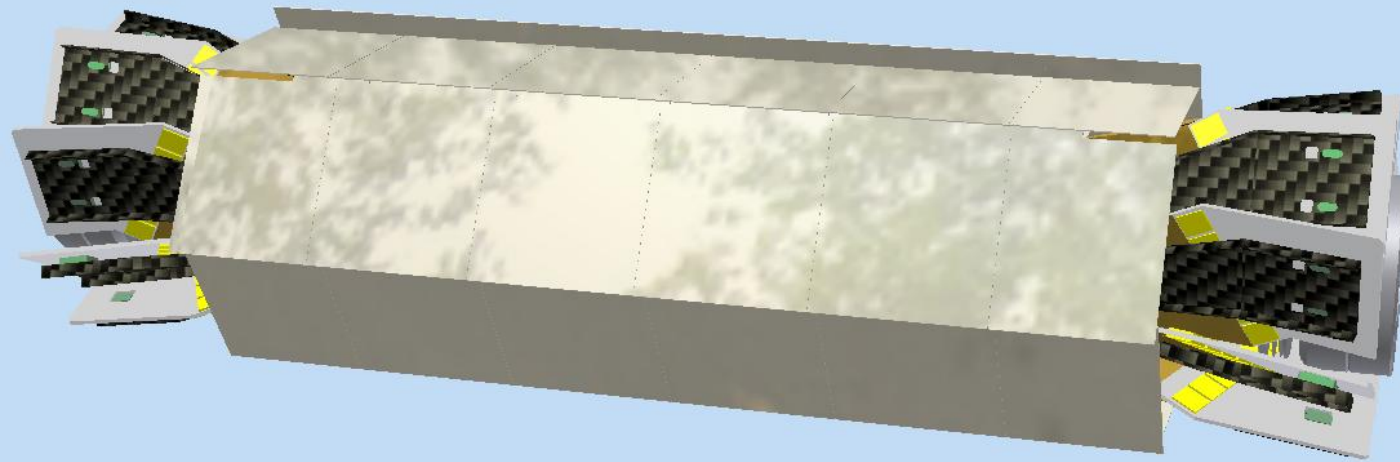
New L0 striplets design



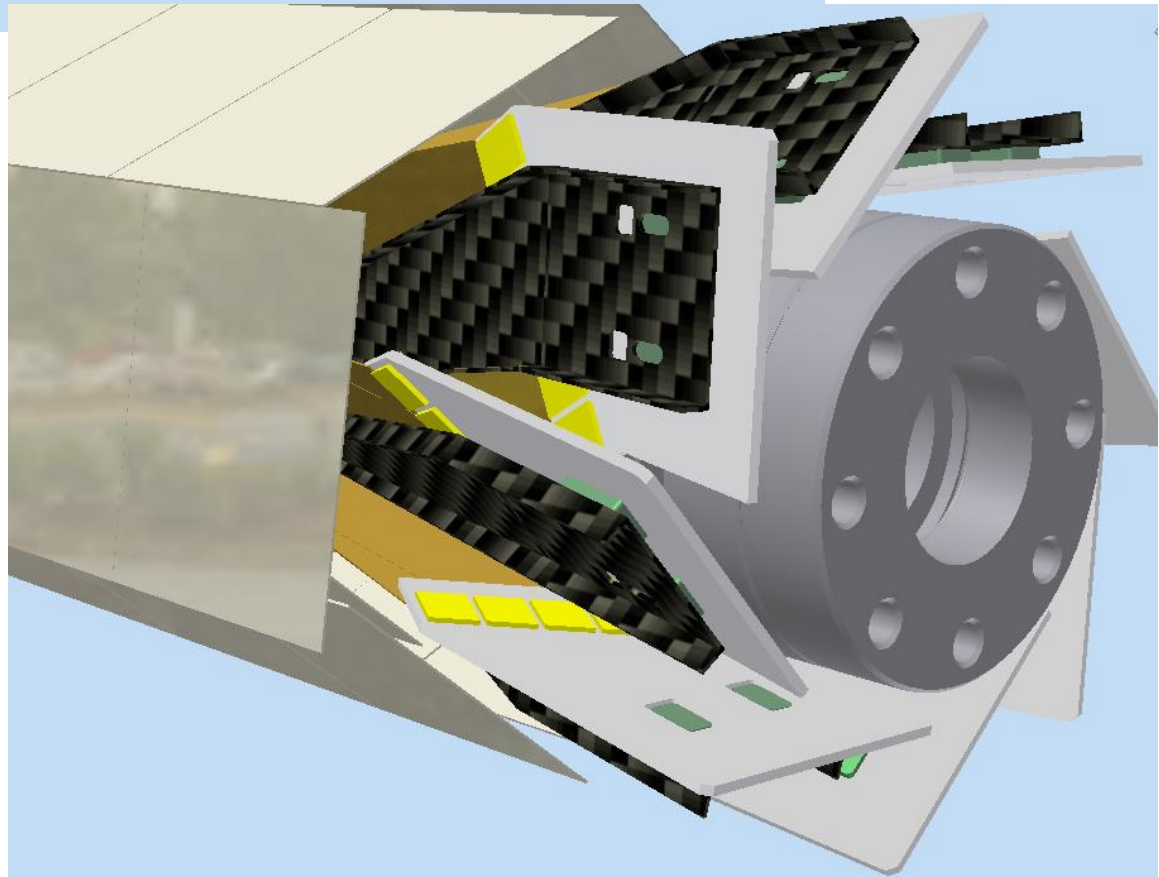
Layer0/Layer1



L0 striplets design

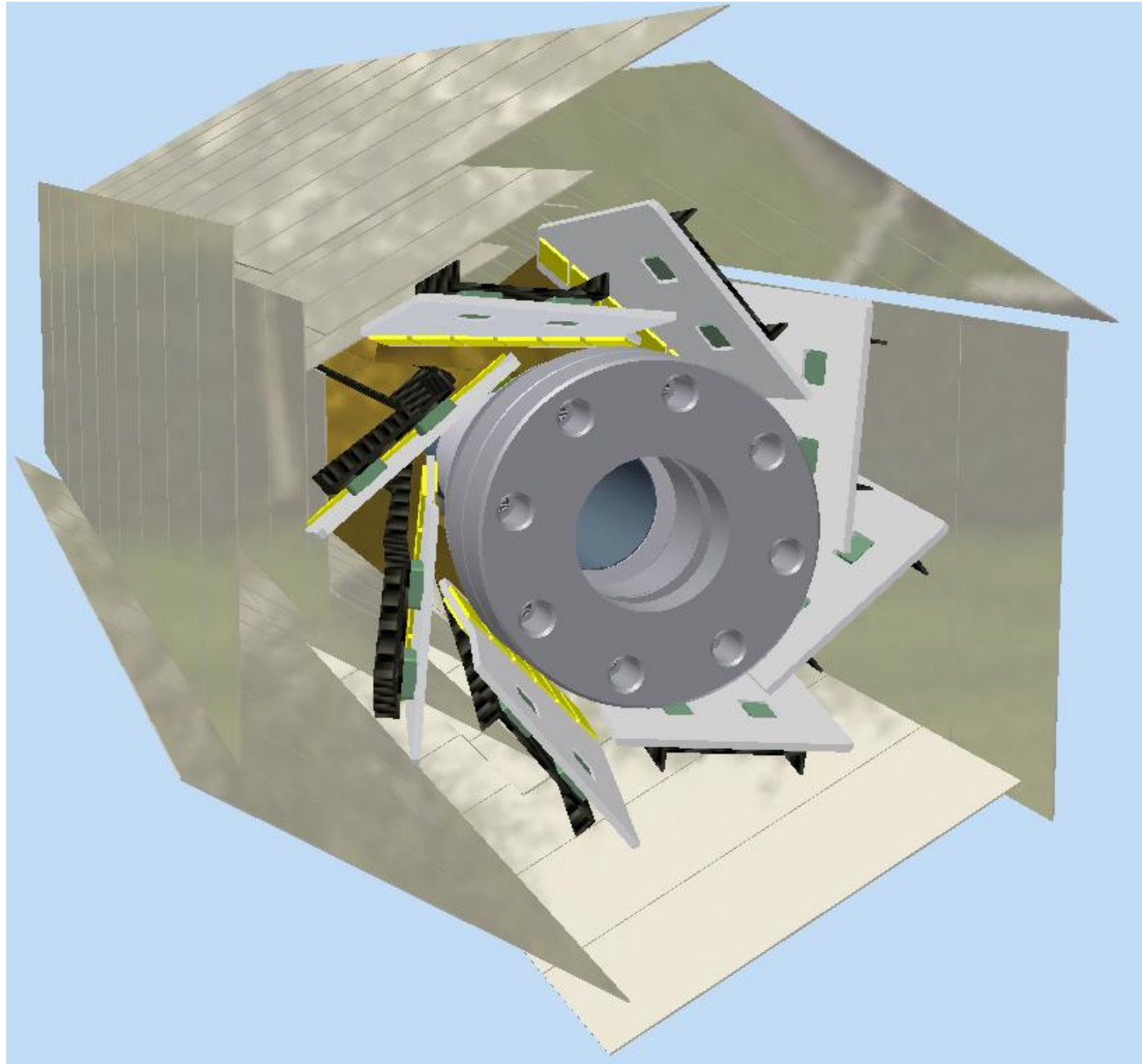


Layer0/Layer2

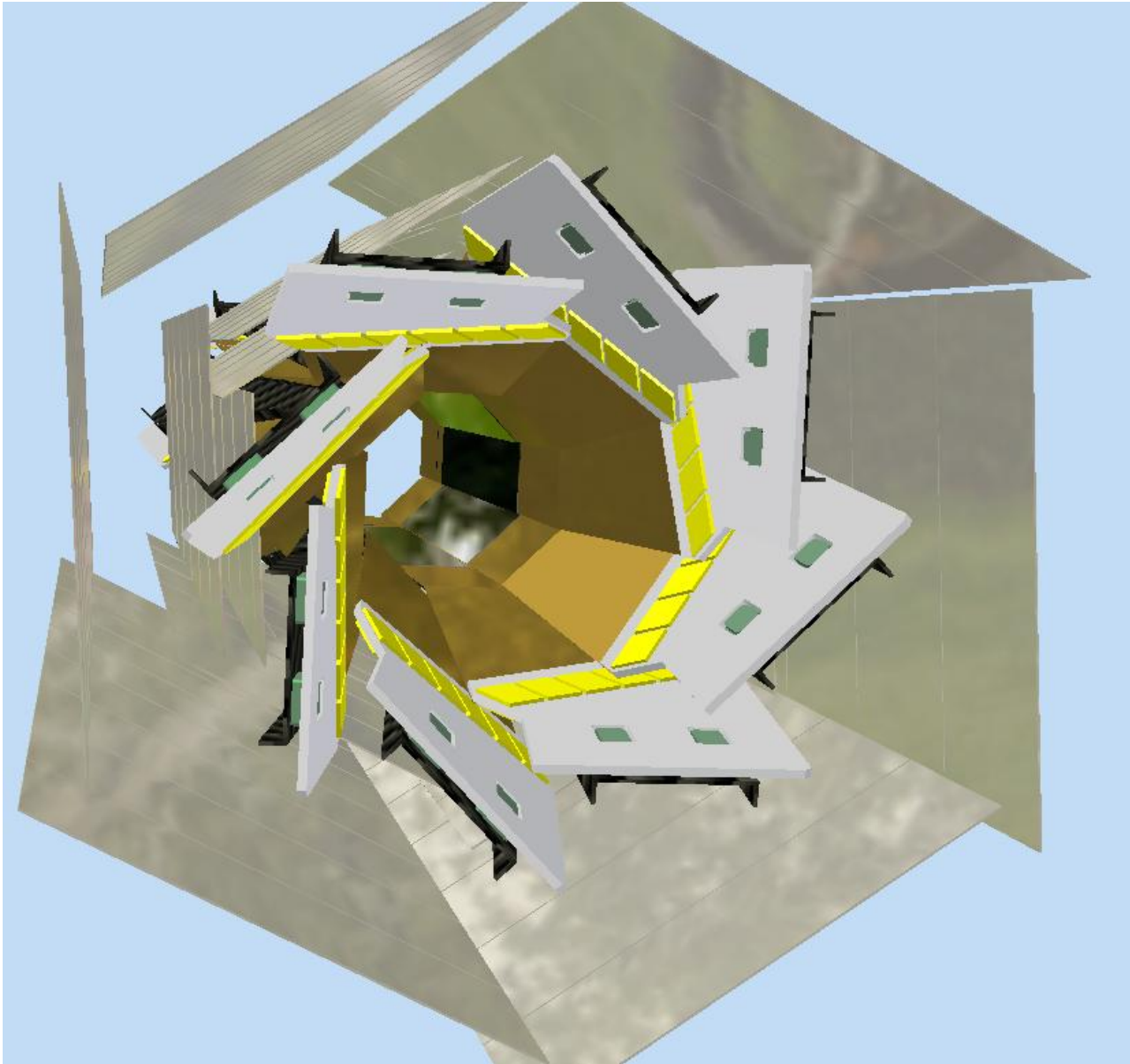


New L0 striplets design

Layer0/Layer3



New L0 stripsets design



Be Beam pipe

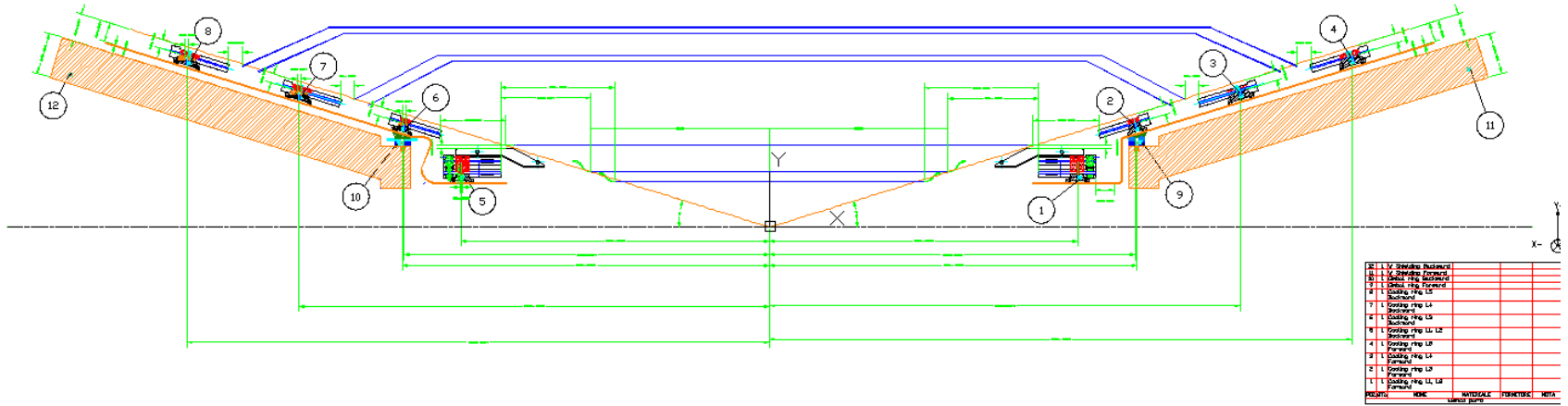
- New length to match L0 striplets design $L=304 \rightarrow 350$ mm :
(+23 mm/side, M.Sullivan suggested around 15 mm....)
- CF flanges not standard :
 - reduced in diameter (4 mm)
 - reduced in thickness (1.5 mm)
 - more screw with reduced diameter



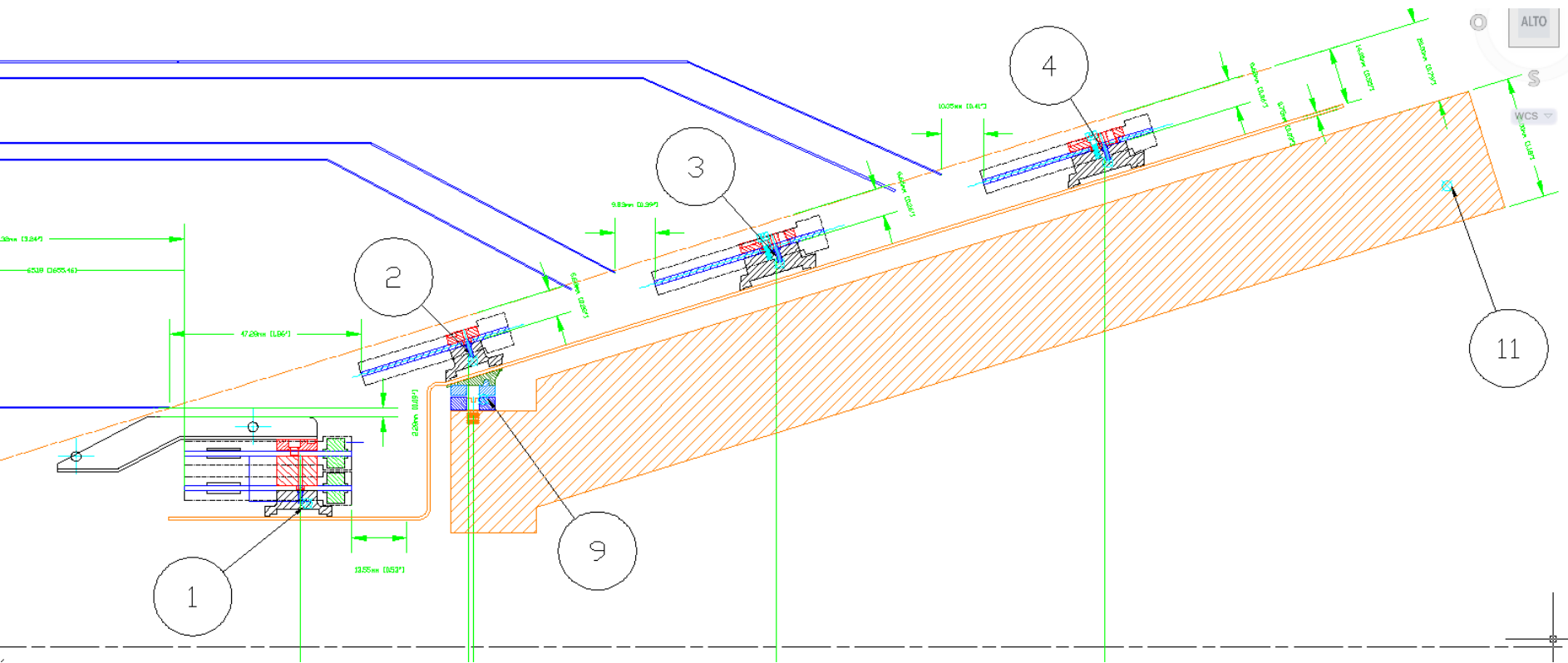
- Need calculation to confirm custom flanges design !
- Need check about permanent magnet position and elliptical pipe hole contained in the sealing flange space

General Layout SVT

Symmetric Layout

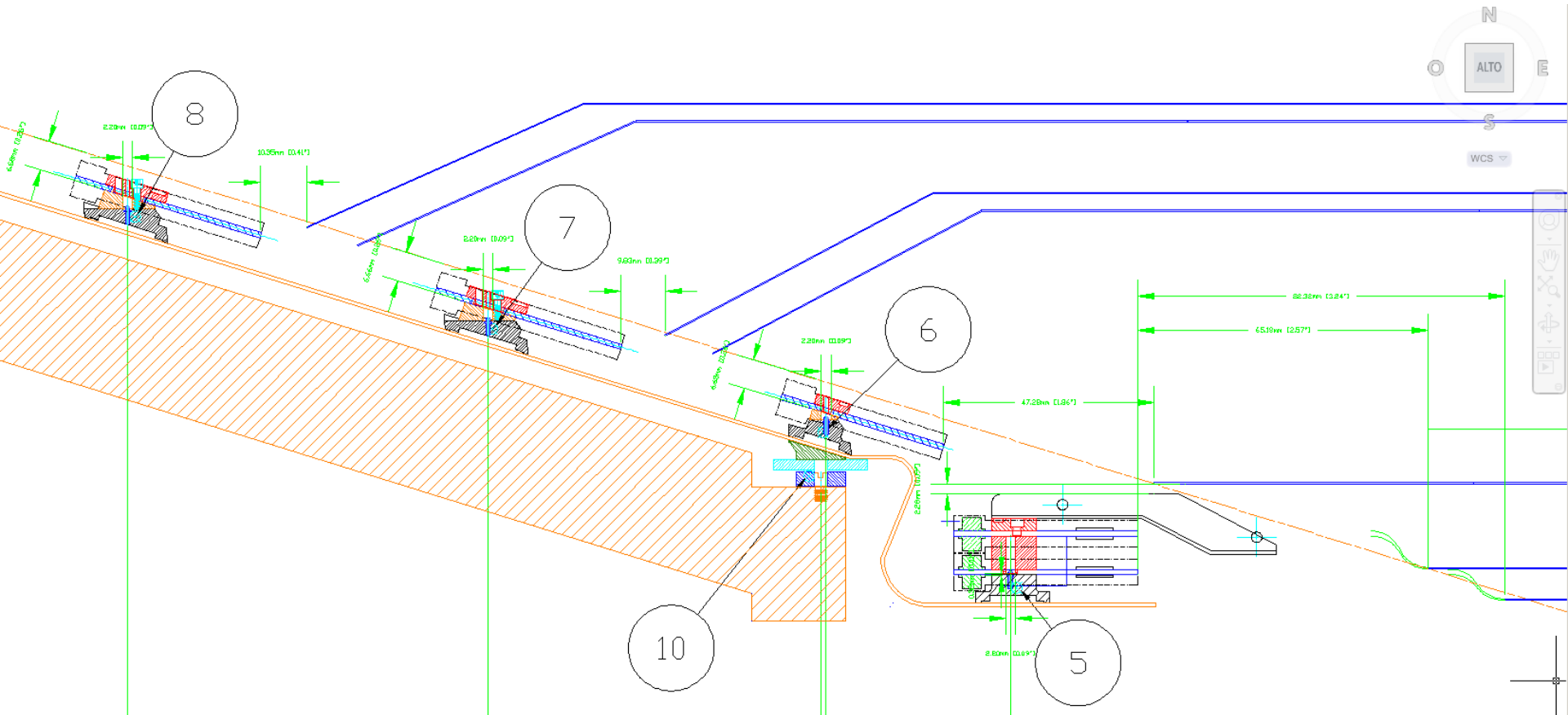


General Layout SVT



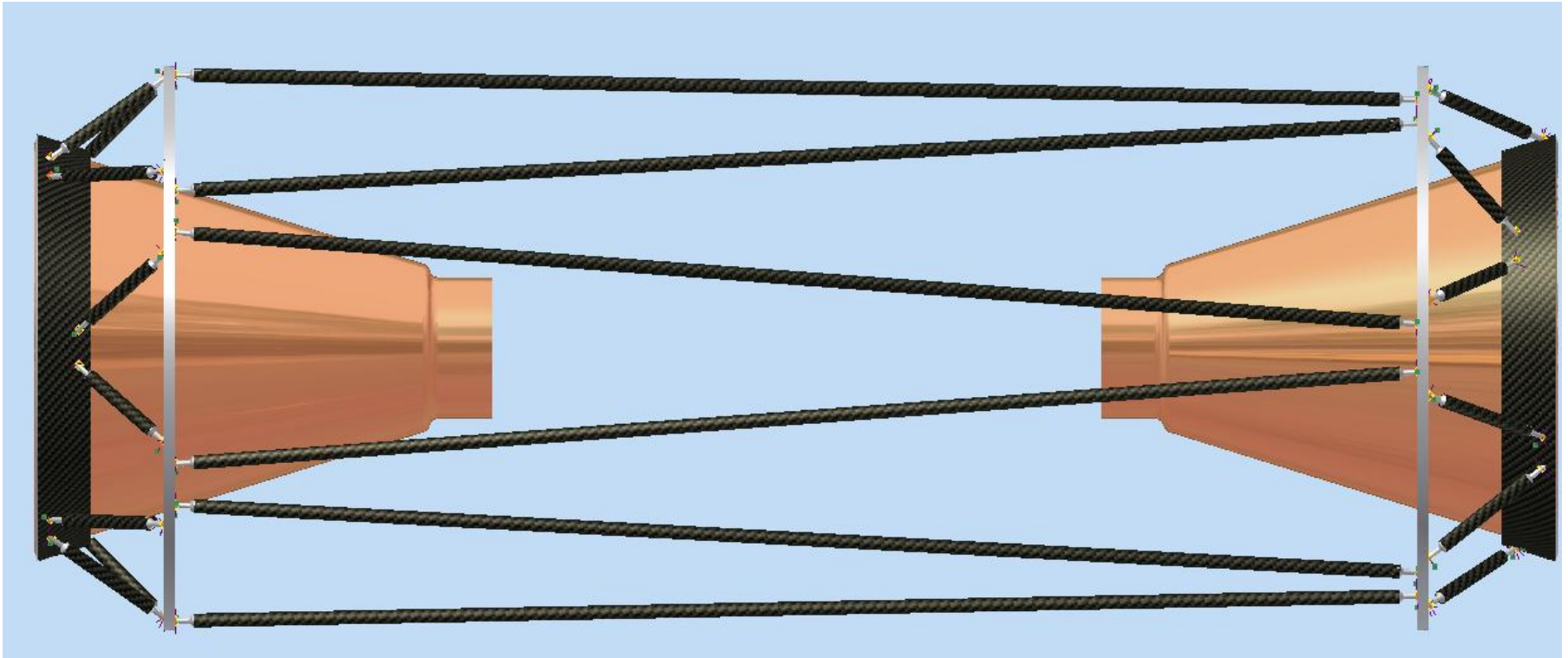
Forward

General Layout SVT



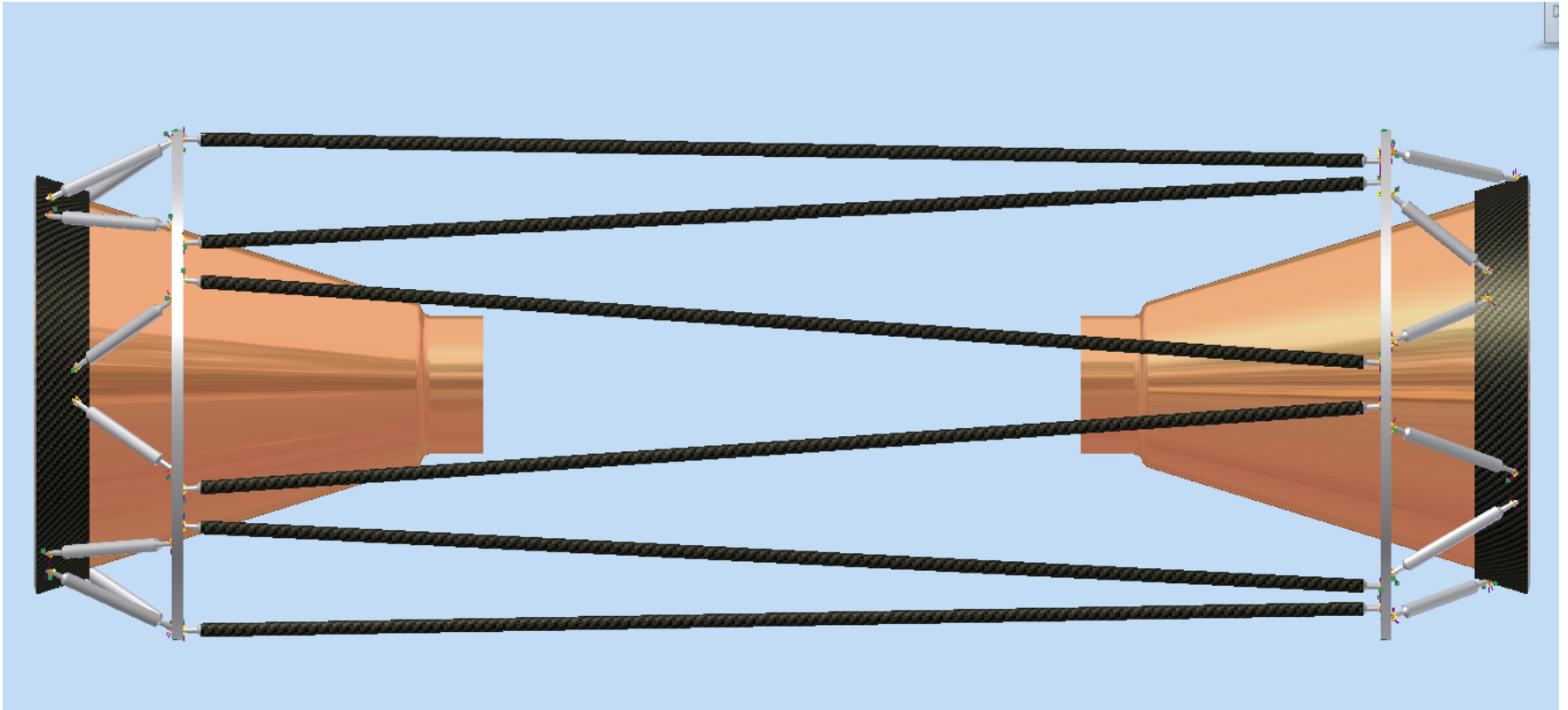
Backward

Space Frame/Supporting Cones (QMUL)



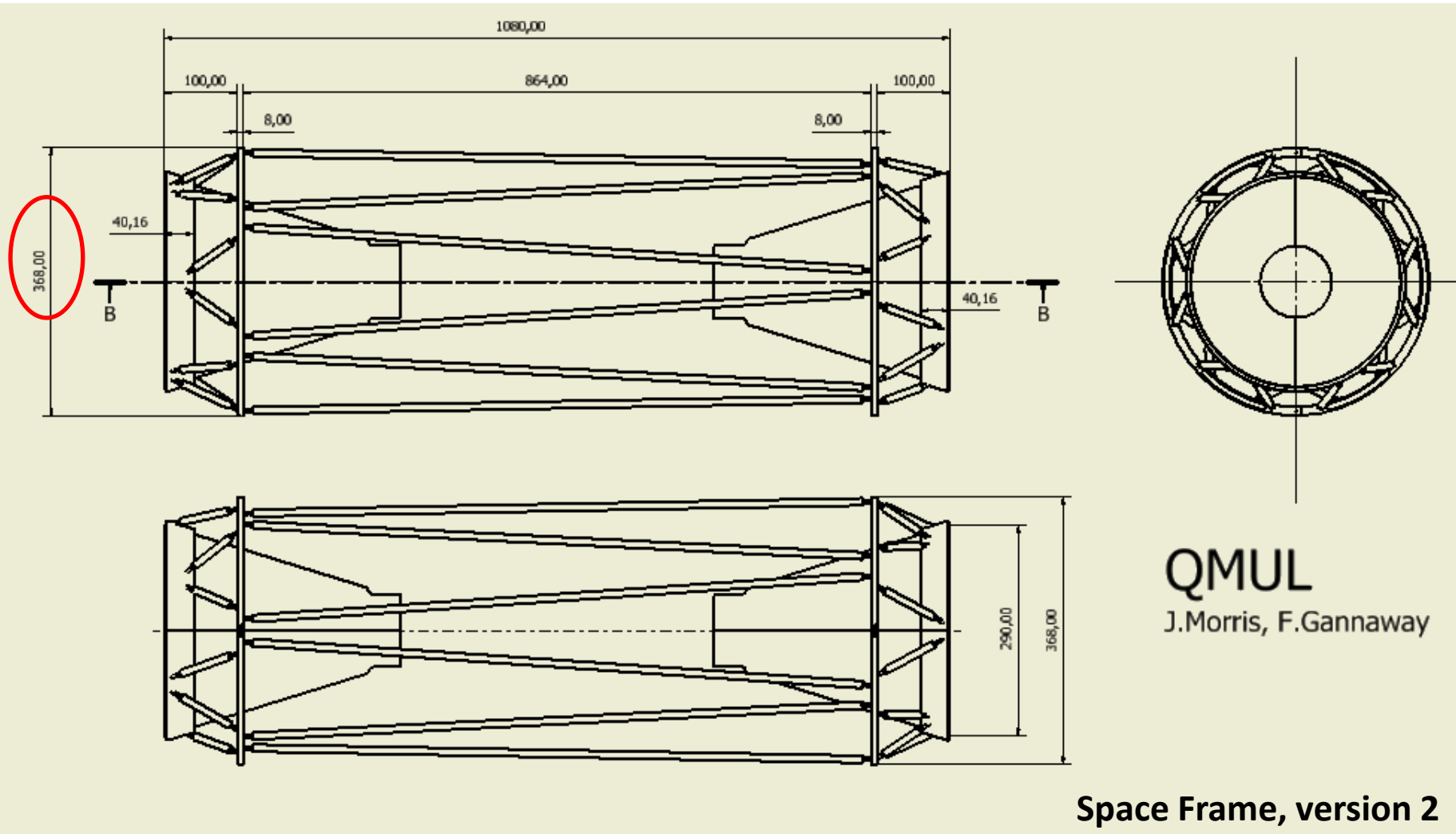
Space Frame, version1

Space Frame/Supporting Cones



Space Frame, version 2

Space Frame/Supporting Cones



Beam pipe

