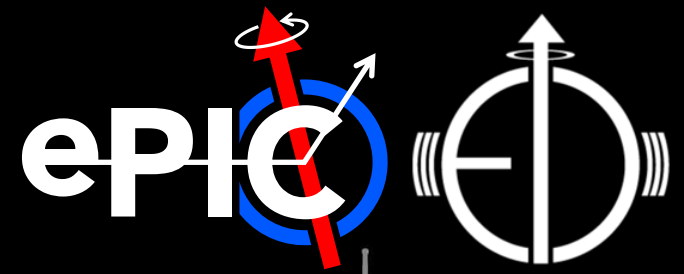




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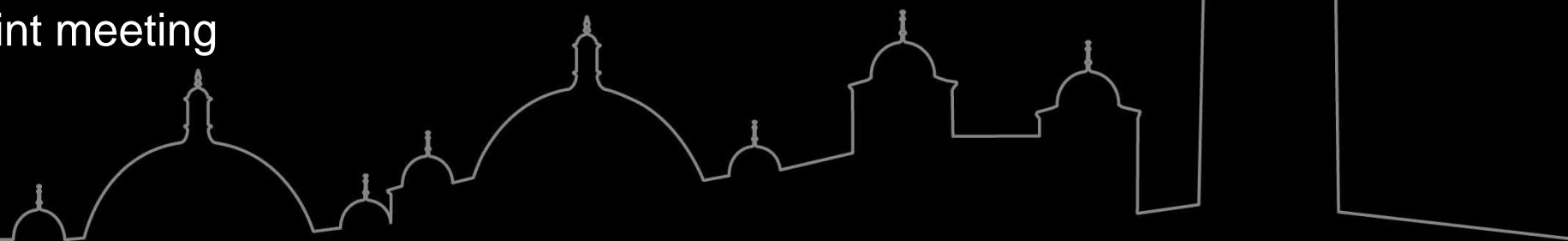


RDO board considerations

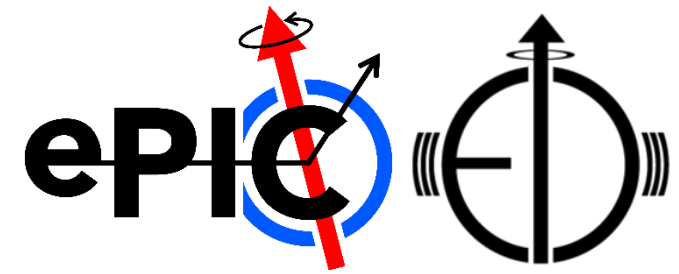
James Glover

ePIC SVT WP4 & WP6 joint meeting

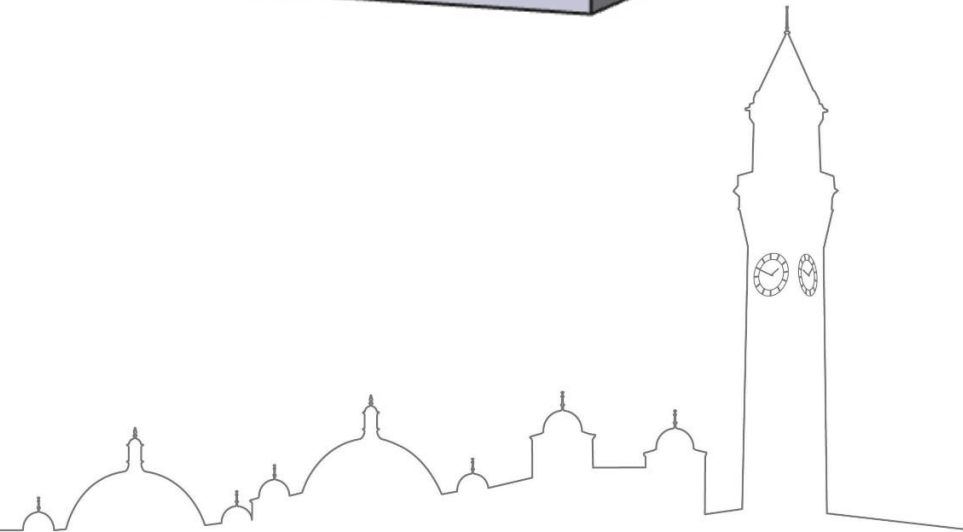
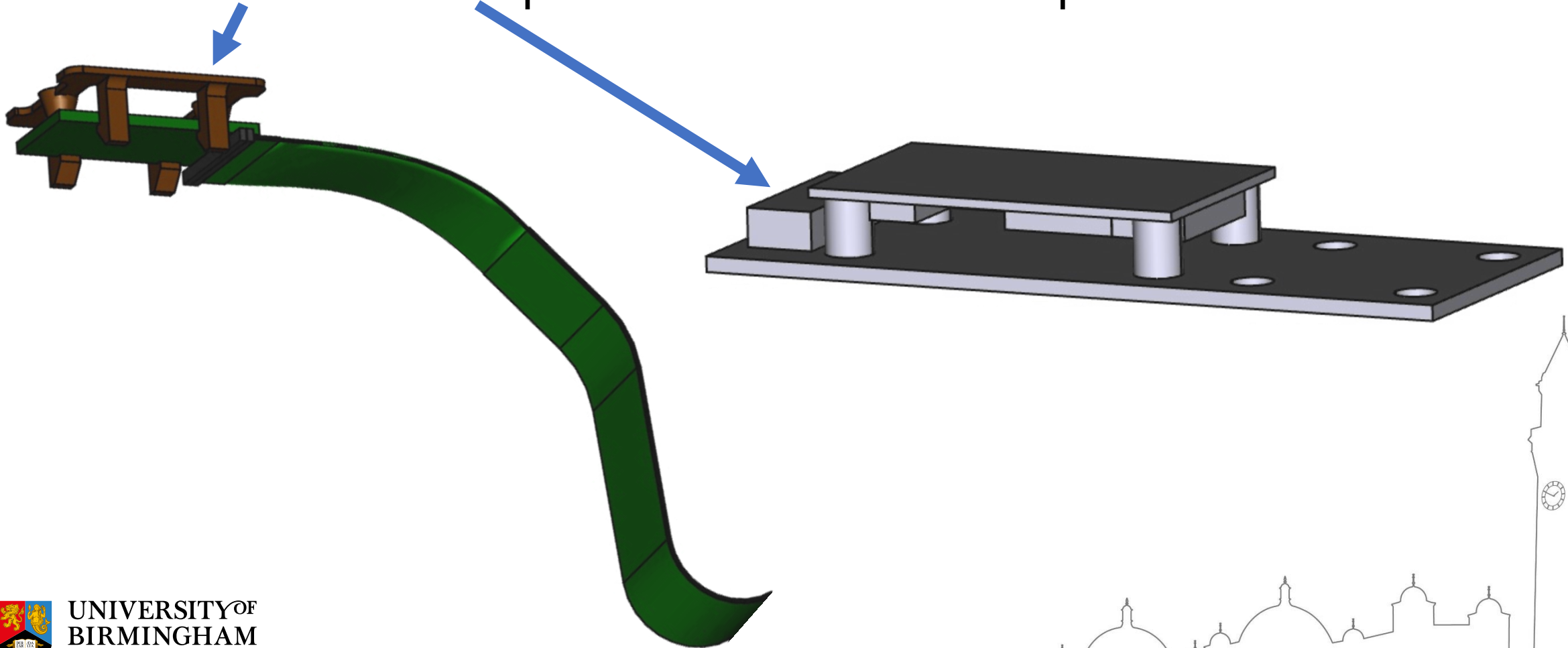
Wed, 4th December 2024



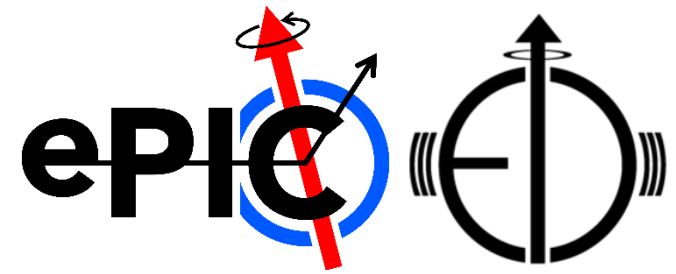
Current CAD models



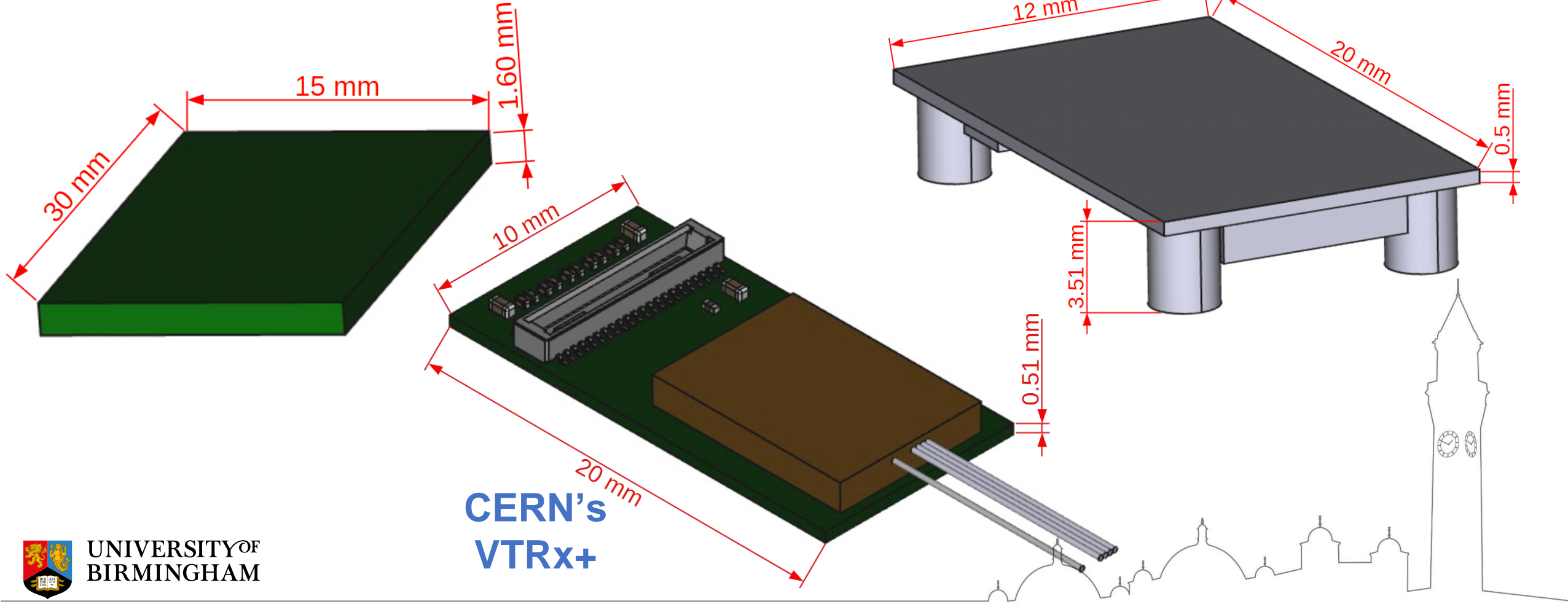
- Both IB and Endcap models have an RDO placeholder.



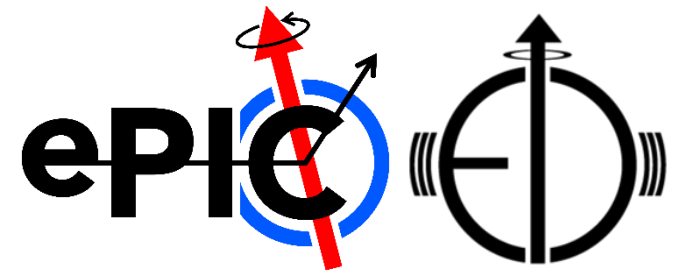
Comparisons with VTRx+



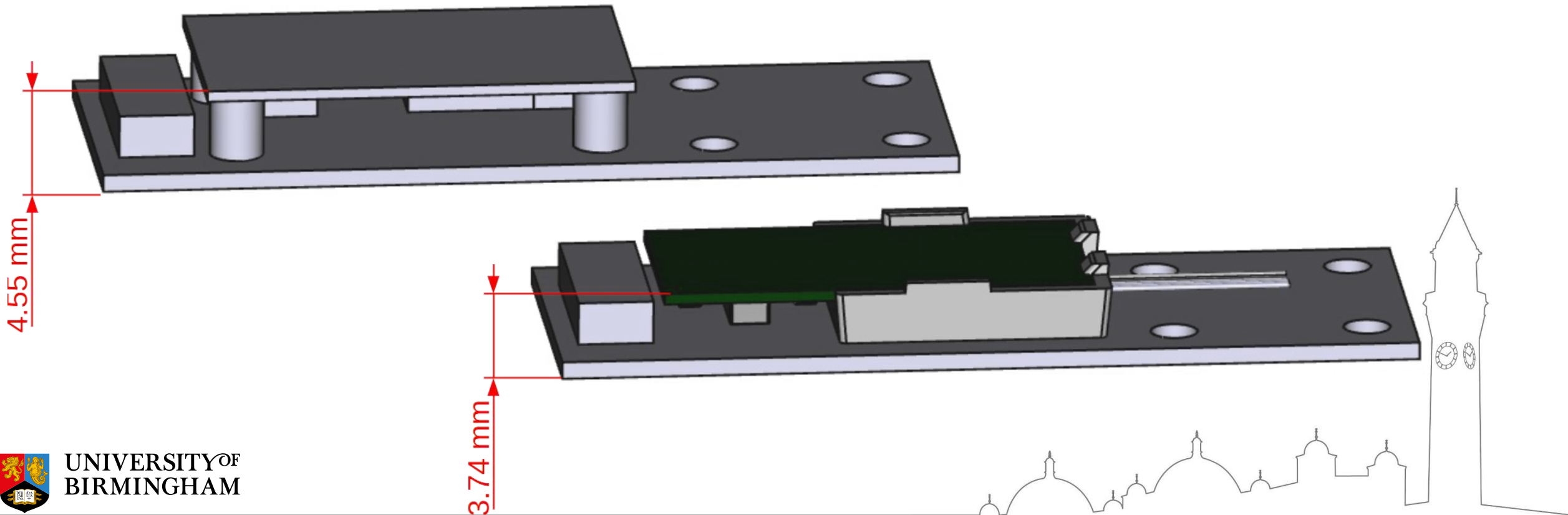
- None quite match the real dimensions of the VTRx+.



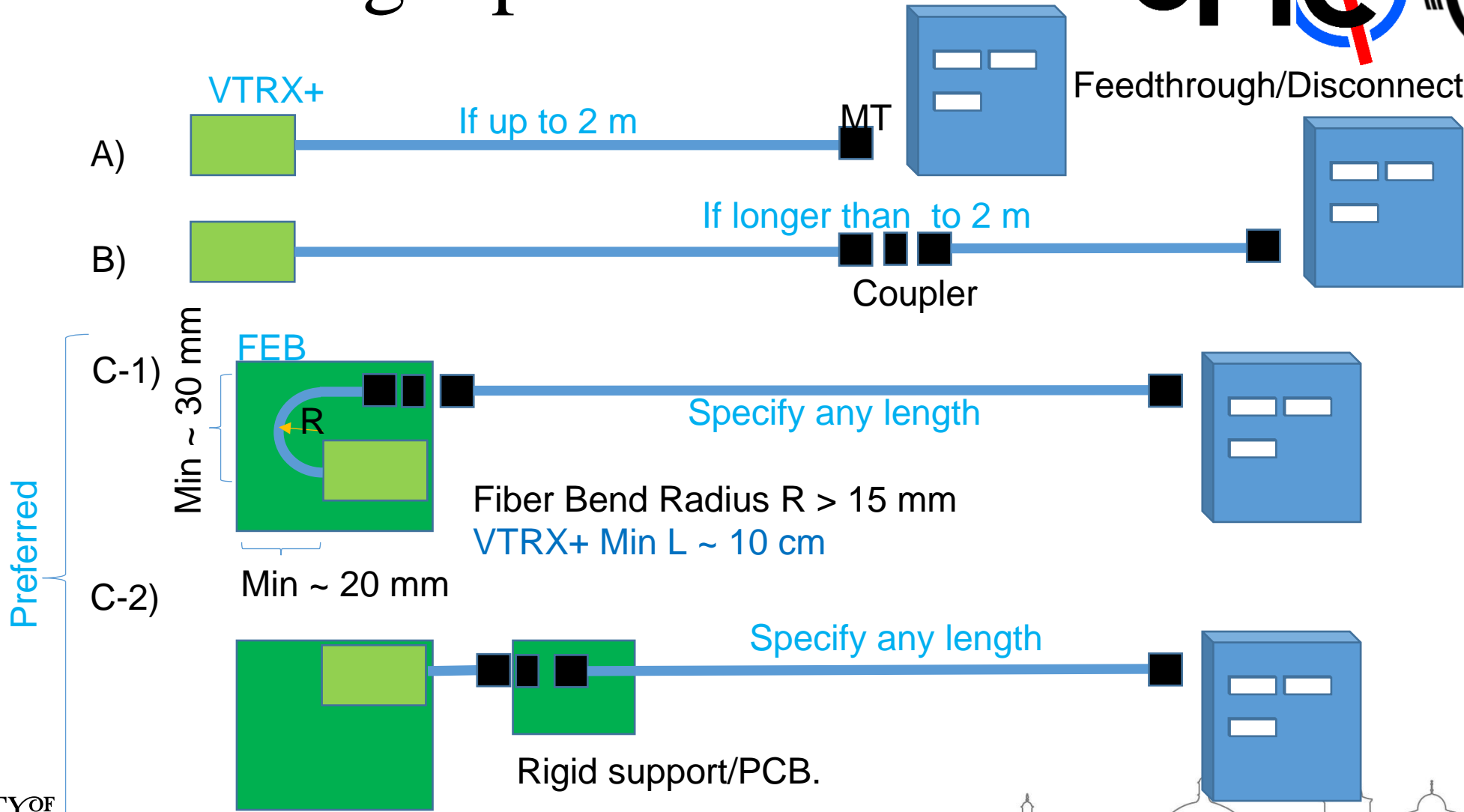
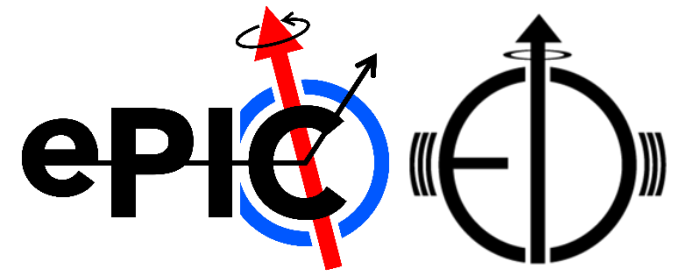
Endcap's VTRx+ with stand-offs



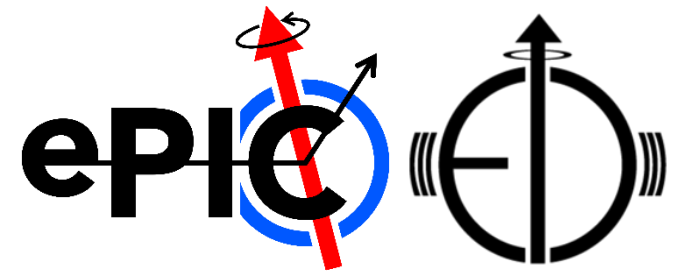
- The endcap model has 3 mm stand-offs raising their VTRx+ from the RDO board, however the CERN-made clip could be used.



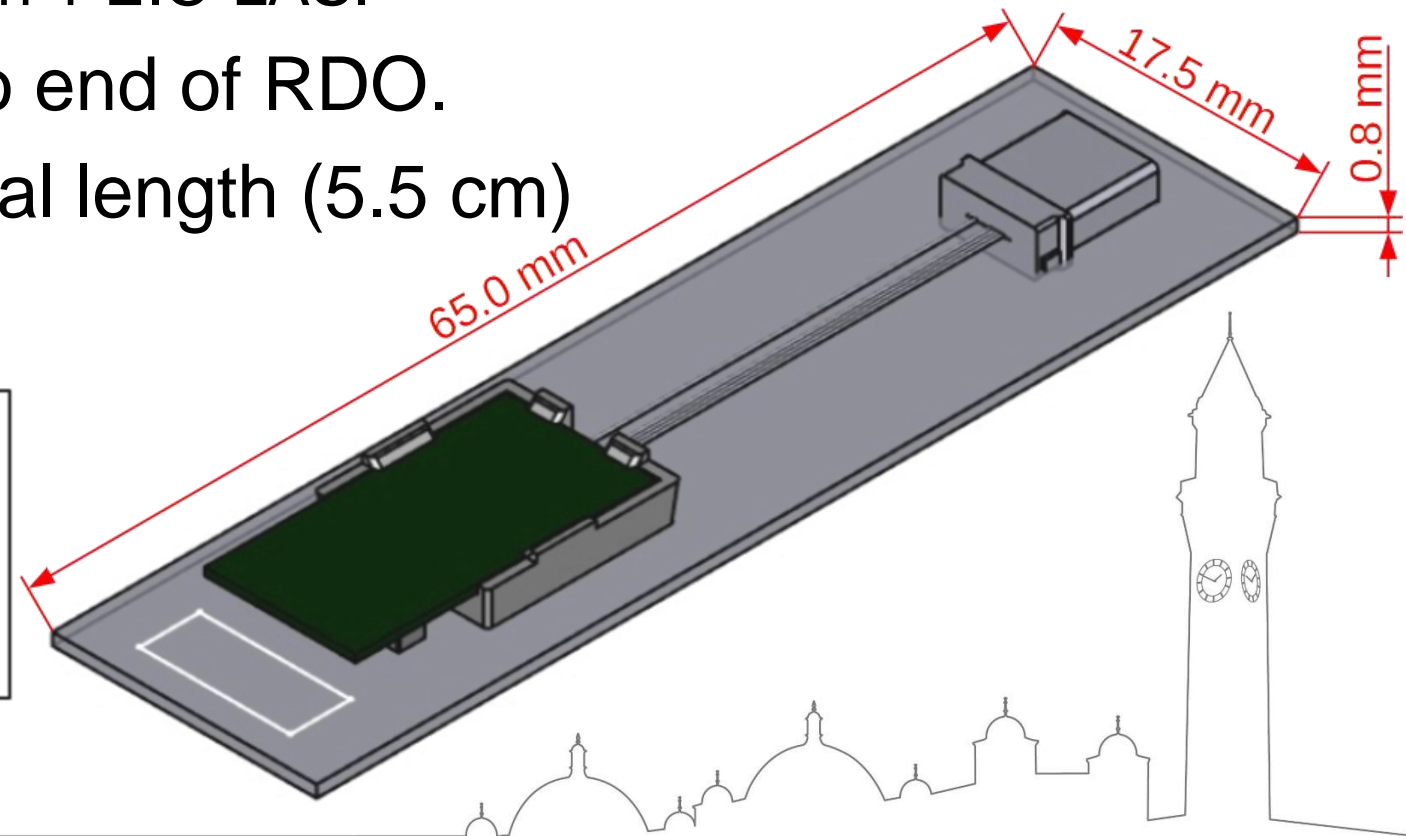
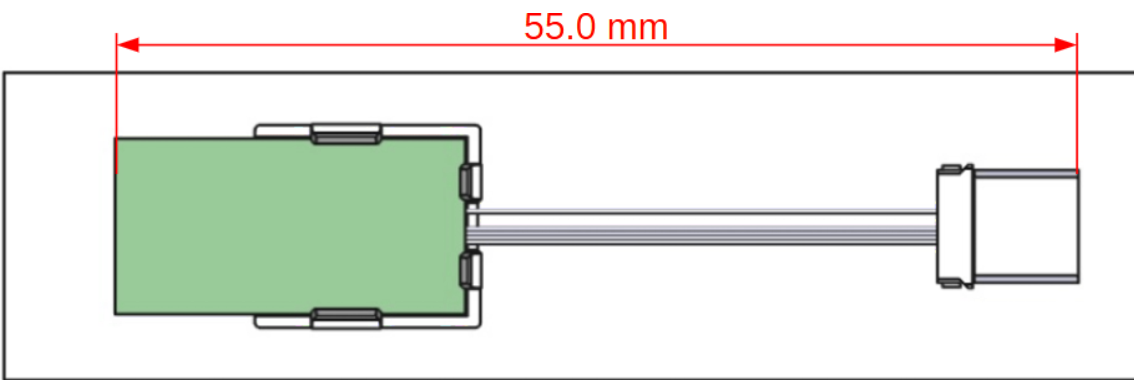
VTRX+ Routing Options



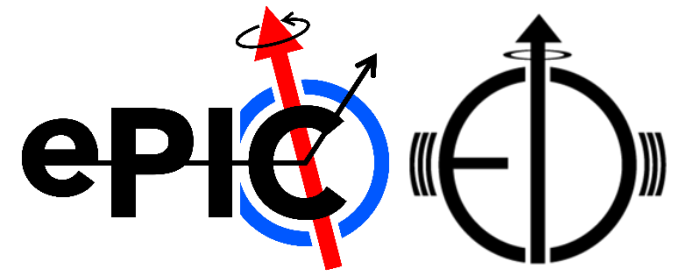
Proposed RDO for OB & Discs



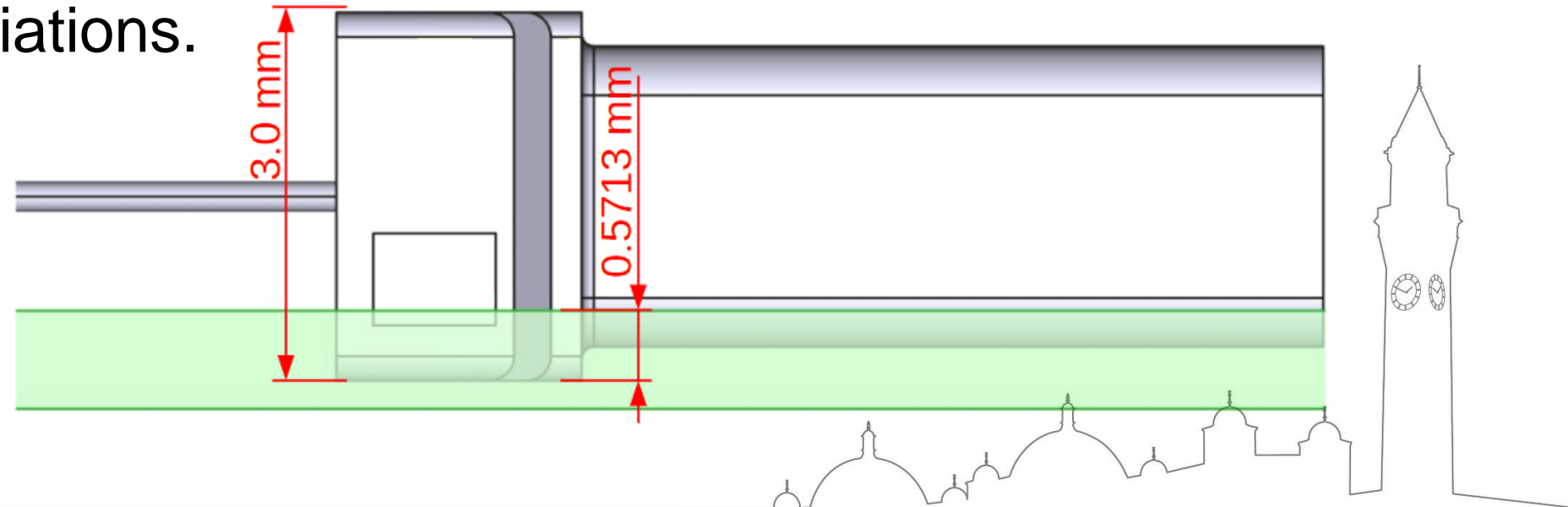
- A variant of the preferred C1/C2 – all on one board (like C1), but with the fibres running straight (like C2).
 - Keeps the board narrower than 1 EIC-LAS.
- Space to bond/solder FPC to end of RDO.
- Use the shortest possible total length (5.5 cm) that CERN will produce.



Connector issue

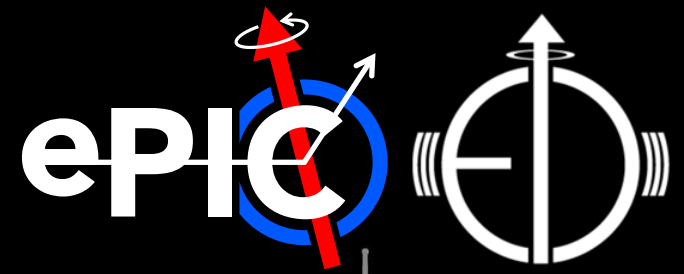


- The connector that CERN supply on the end of the fibres is thicker than the VTRx+ with clip.
- Fibres can not lay completely flat.
- Need to look at options for mounting the connector to the PCB with adjustable position – to account for connector thickness and fibre length variations.



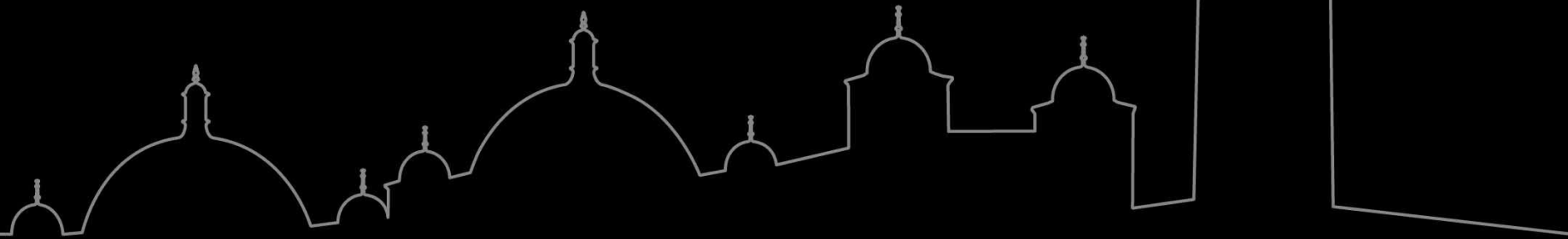


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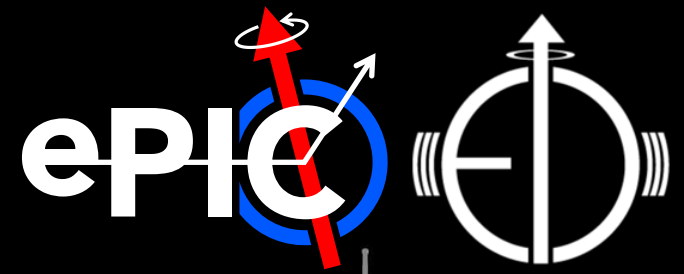
Thank you very much!

Any questions?

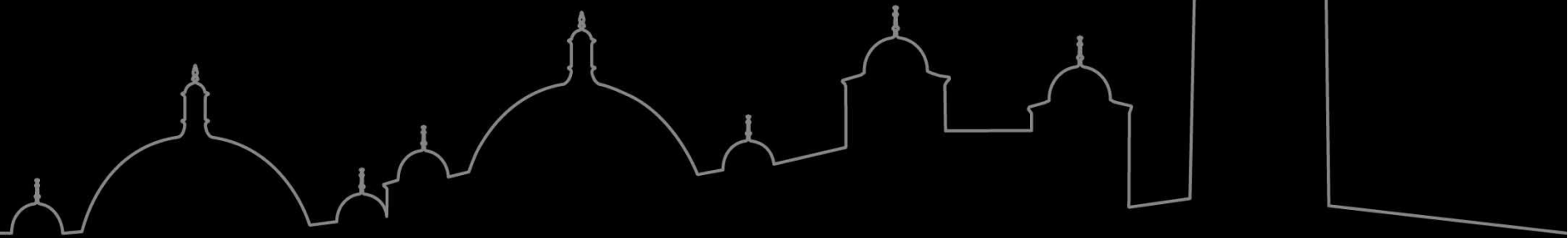




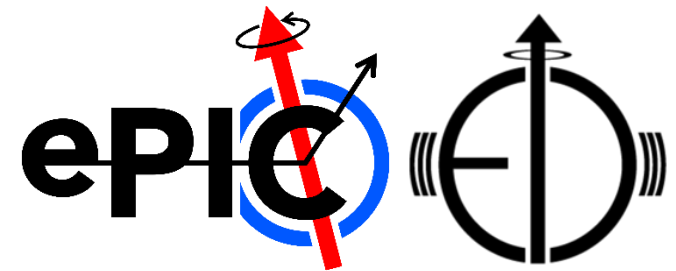
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Additional (support) slides



VTRx+ Length Options (details)



Choose Total Length (cm)
5.5
7.7
10
12
15
20
21.5
25
30
32.5
35
40
49
50
65
84
100
200

□ **Total Length** is the length of the fiber pigtail plus the length of the VTRX+ PCB (2 cm) and the length of the MT fiber connector (1 cm): $L = \text{fiber length} + 3 \text{ cm}$.

Extra cost due to “sacrificial” fiber needed (for CERN’s test set up).

Long Lead Procurement Order (5500):

Sub-Detector	Qty	Total Length (cm)
SVT	2000	
dRICH	1500	
MPGDs	1000	
TOFs	400	
pfRICH	136	
RP	128	
OMD	72	
BO Tracker	168	
Lumi-PS	72	
various	24	

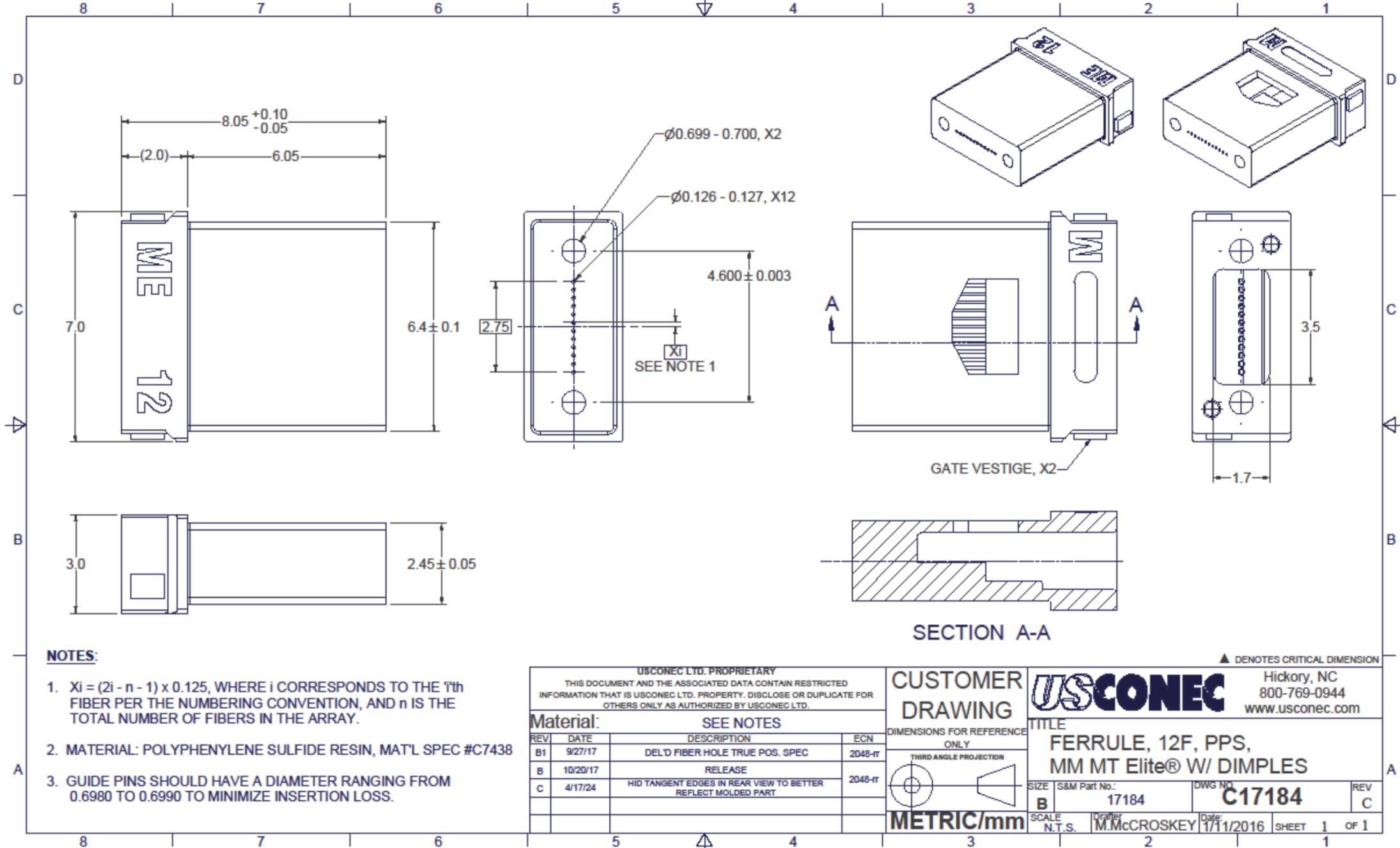
Needed:

Sub-Detector	Qty	Total Length (cm)
SVT	1579	
MPGD EE	64	
MPGD HE	64	
MPGD IB	128	
MPGD uRwell	384	
TOF Disk	212	
TOF Barrel	288	
dRICH	1242	
pfRICH	68	

Electron side Sub-Detector	Qty	Total Length (cm)
SVT	790	
MPGD EE	64	
MPGD IB	64	
TOF Barrel	144	
pfRICH	68	

Hadron side Sub-Detector	Qty	Total Length (cm)
SVT	790	
MPGD HE	64	
MPGD IB	64	
MPGD uRwell	384	
TOF Disk	212	
TOF Barrel	144	

Deadline for pigtail lengths (not a hard deadline) but needed 6 months in advance of delivery (minimum).
Something needed in Dec '24.



NOTES:

1. $X_i = (2i - n - 1) \times 0.125$, WHERE i CORRESPONDS TO THE i 'th FIBER PER THE NUMBERING CONVENTION, AND n IS THE TOTAL NUMBER OF FIBERS IN THE ARRAY.
2. MATERIAL: POLYPHENYLENE SULFIDE RESIN, MAT'L SPEC #C7438
3. GUIDE PINS SHOULD HAVE A DIAMETER RANGING FROM 0.6980 TO 0.6990 TO MINIMIZE INSERTION LOSS.

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Material:		SEE NOTES	
REV	DATE	DESCRIPTION	ECN
B1	9/27/17	DEL'D FIBER HOLE TRUE POS. SPEC	2048-IT
B	10/20/17	RELEASE	2048-IT
C	4/17/24	HID TANGENT EDGES IN REAR VIEW TO BETTER REFLECT MOLDED PART	

▲ DENOTES CRITICAL DIMENSION

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DIMENSIONS FOR REFERENCE ONLY					
THIRD ANGLE PROJECTION					
TITLE		FERRULE, 12F, PPS, MM MT Elite® W/ DIMPLES			
SIZE	S&M Part No.:	DWG NO.	REV		
B	17184	C17184	C		
SCALE	DATE	DRAWN BY	SHEET 1 OF 1		
N.T.S.	1/11/2016	M.McCROSKEY			