CONSTRUCTIVE OPERATIONAL SAFETY @ STT

26.10.2021 I A.DERICHS

CONTENT

I STT-READOUT

a) READOUT Mock-up V1.0

b) READOUT Mock-up V2.0

II STT-Cablechannel

a) Cablechannel V1.0

b) Cablechannel V.1.1

III STT-Internal Gaslayout

a) Flashback Gaslayout V.1.0/ V1.1

b) Update Gaslayout V.2.0

CONTENT

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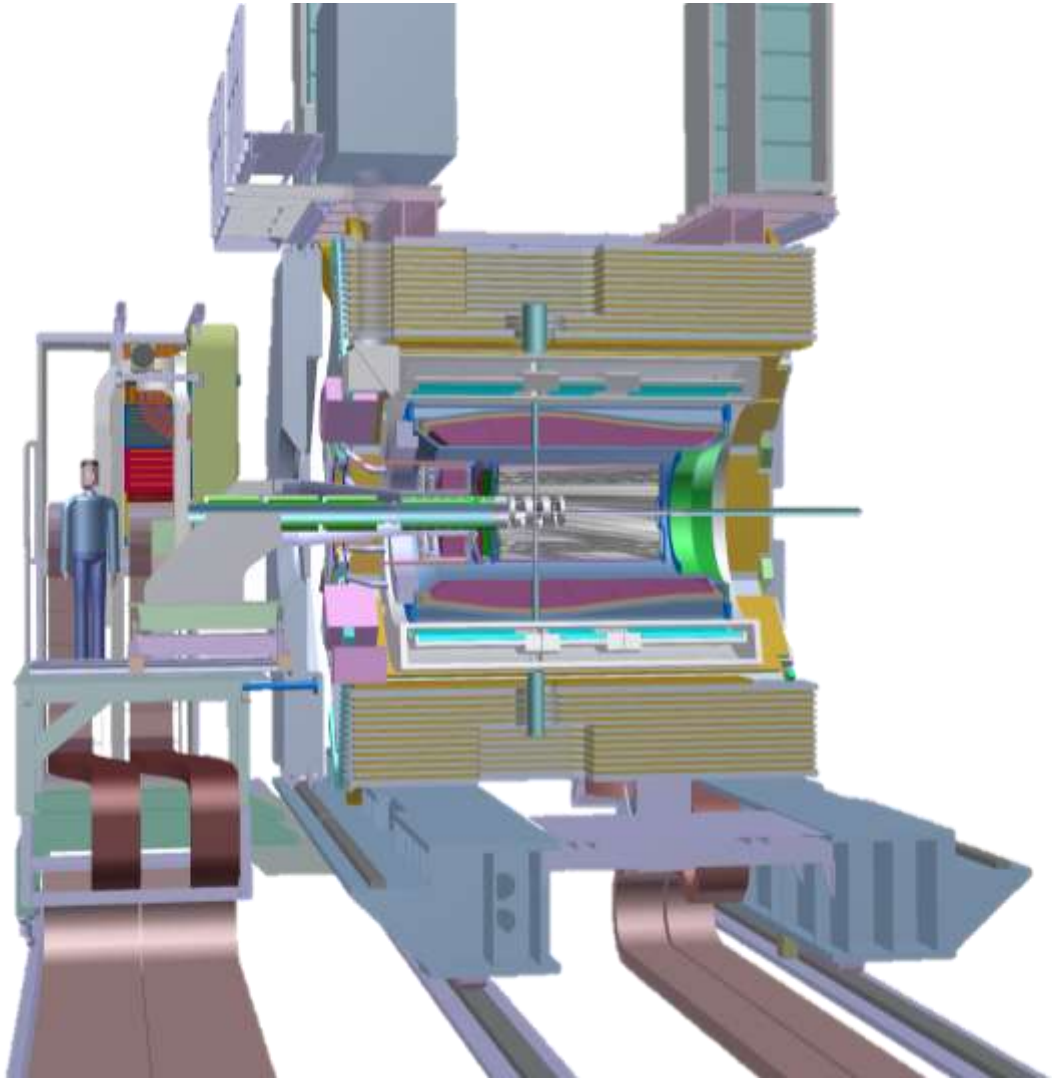
b) Update Gaslayout V.2.0

I a) STT-READOUT MOCK-UP V1.0

-Minimum Cooling flow

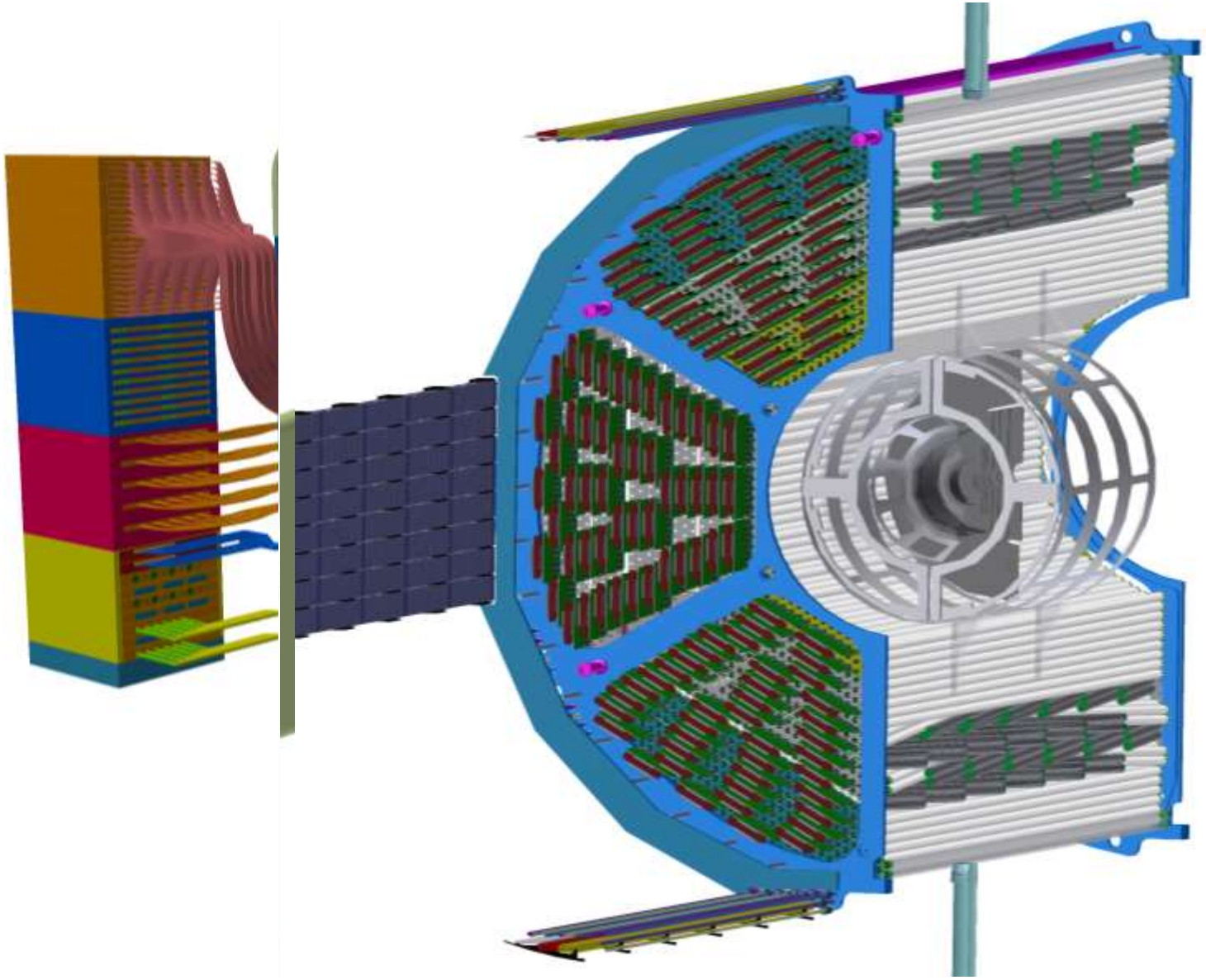
-Stable operation temp.



JÜLICH Forschungszentrum

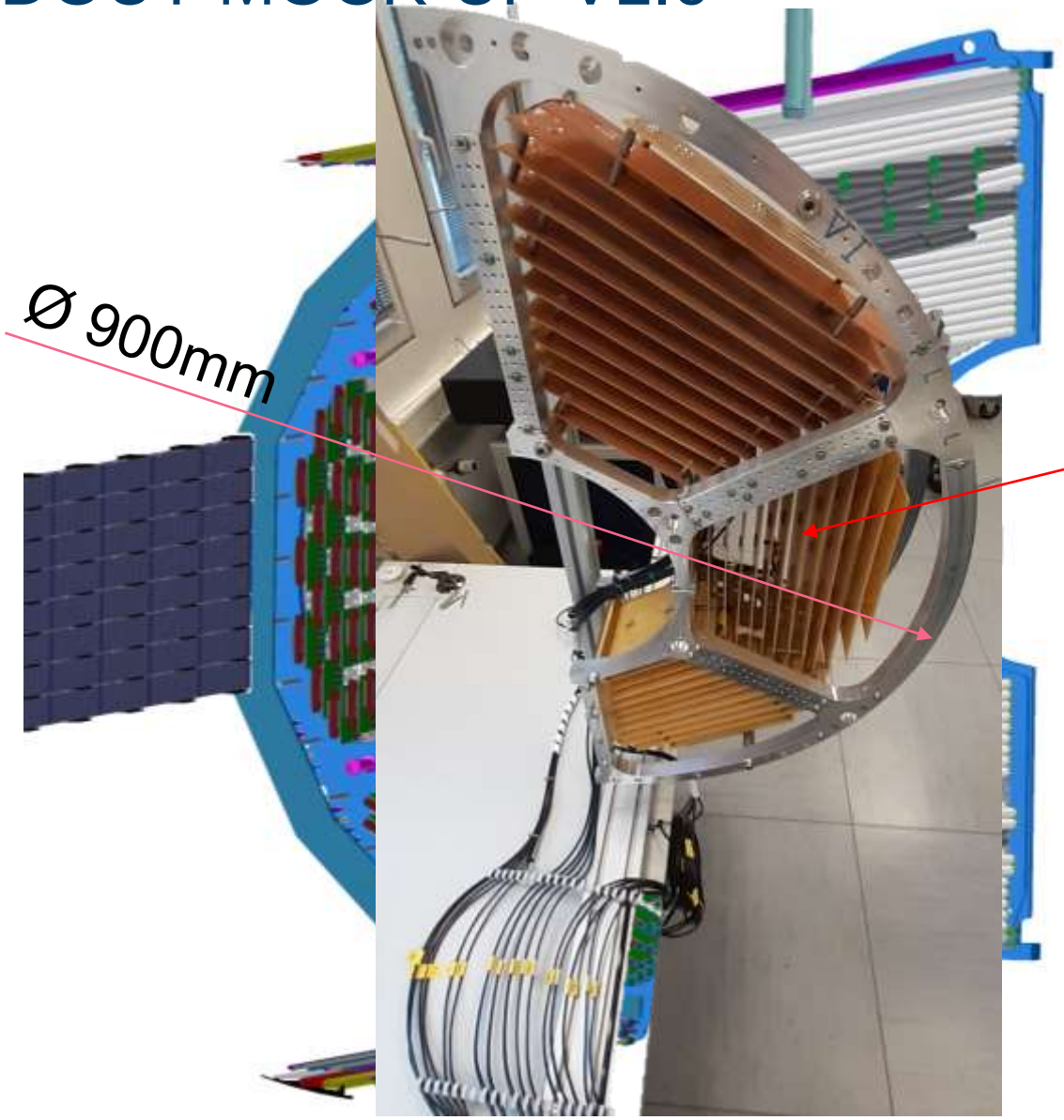
I a) STT-READOUT MOCK-UP V1.0

STT



I a) STT-READOUT MOCK-UP V1.0

Flex. Prototype



1 Card ≈ 600mW

3 Res ≈ $1W_{max}$

n_{res} = 393 ≙ 131 Cards

I a) STT-READOUT MOCK-UP V1.0

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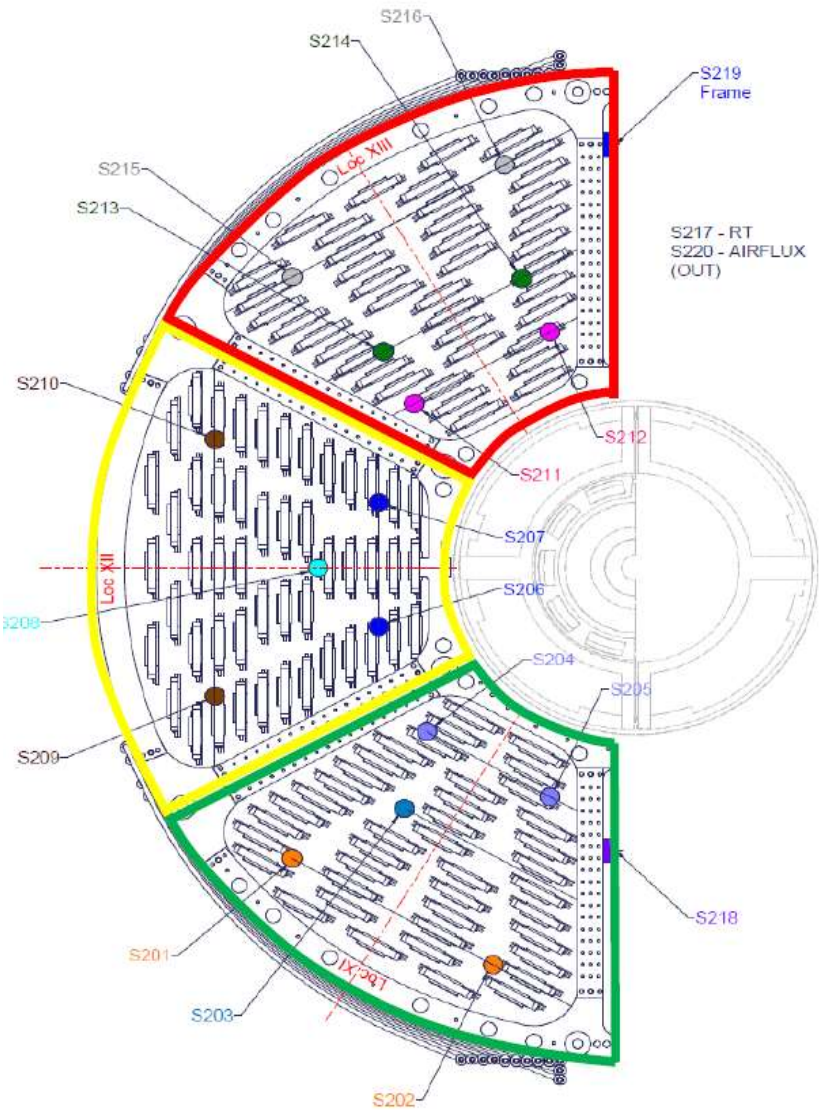
Measurement layout



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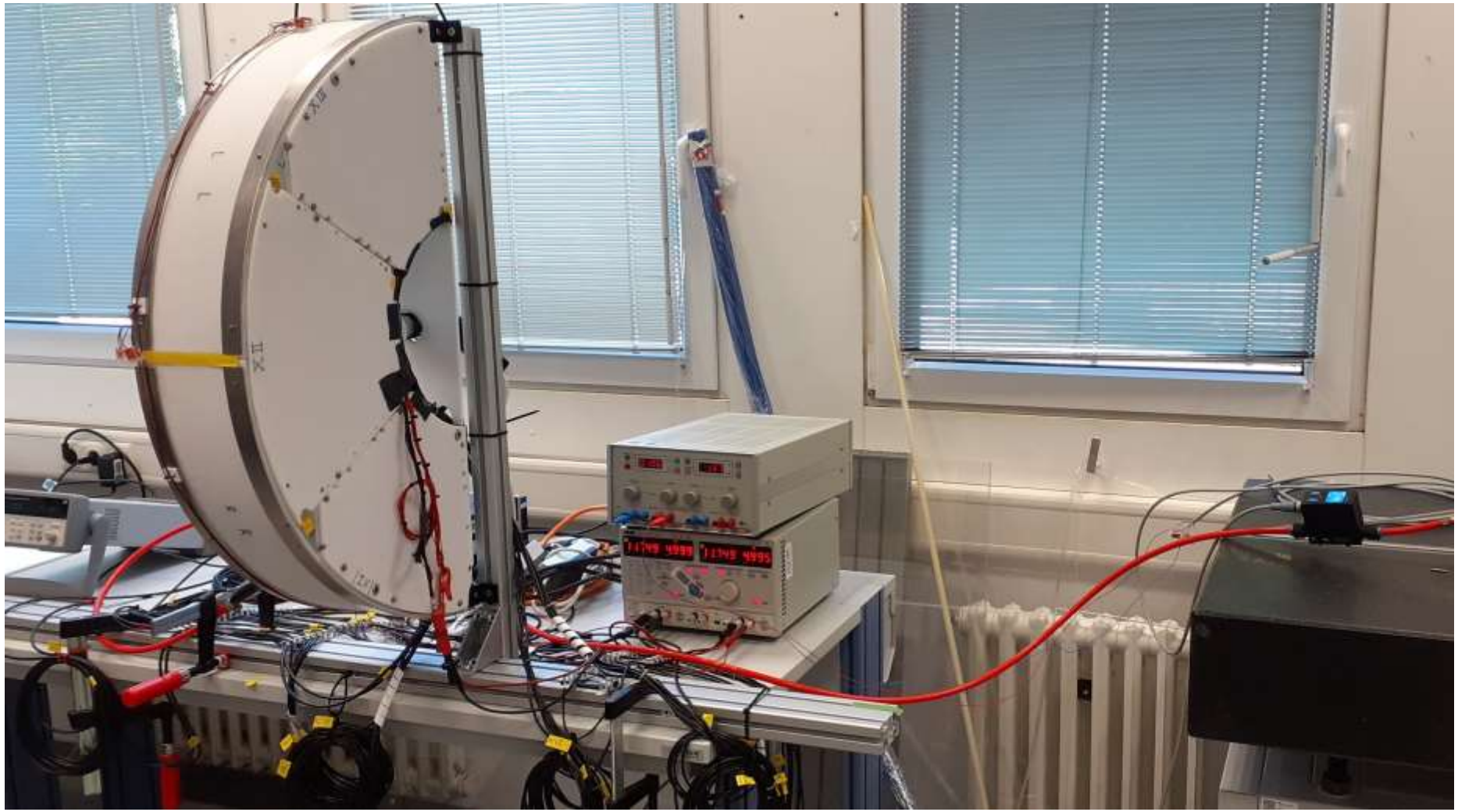

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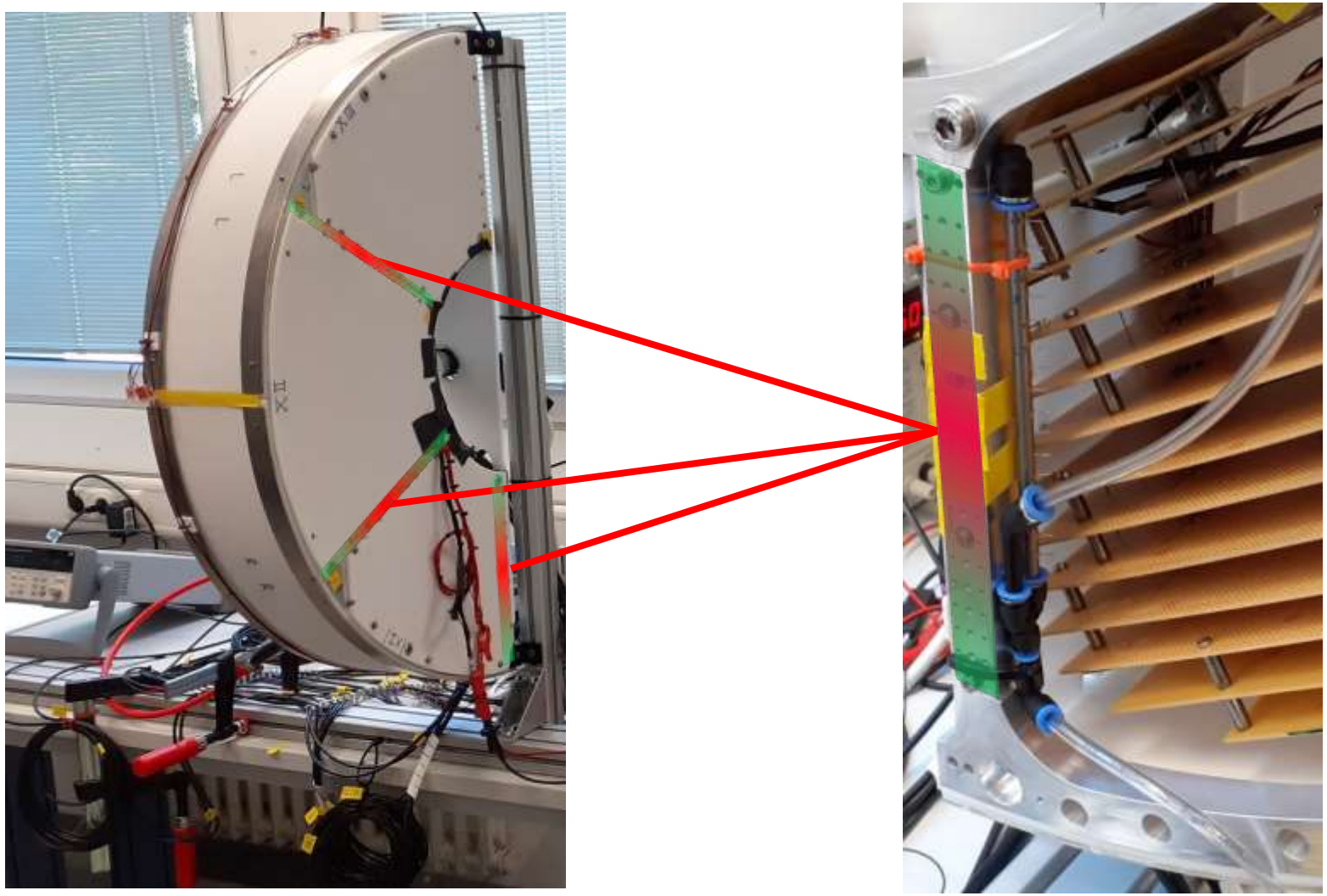

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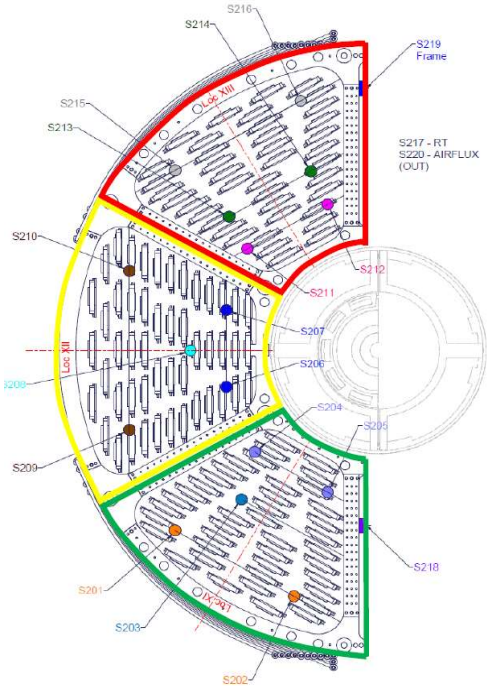

	BIG FAN	
Sector	75W+FAN+Closed+60W MVD	120W+FAN+closed+60W MVD
	75W	**120W**
I	46	53
	32	31
	52	58
	39	42
	36	36
II	41	44
	48	53
	51	57
	42	44
	50	57
III	52	57
	61	70
	59	68
	64	76
	52	59
	55	61

CLOSED -> Gas manifold(s) (MVD 60W)			
120W		120W	120W
0 L/min	**50 L/min**	**80L/min**	**200 L/min**
59	49	45	38
43	48	45	40
64	46	43	37
69	49	46	39
43	44	42	37
71	50	47	39
76	54	49	40
77	48	45	38
61	52	48	40
78	54	49	40
79	50	46	38
92	56	51	41
89	52	47	39
99	57	52	42
81	57	51	40
91	63	56	43

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a) Cablechannel V1.0

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a) Flashback Gaslayout V.1.0/ V1.1

b) Update Gaslayout V.2.0

I b) STT-READOUT MOCK-UP V2.0

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Hardware Mod V1.0 -> V2.0

- FE-Dummy, size and poweroutput of last rev. (2021)
- New Modular readout attachment
- Precise Frontend pitch (vert/hori)
- Complete assemlby of the realistic geometry
- New Cooling manifolds

I b) STT-READOUT MOCK-UP V2.0

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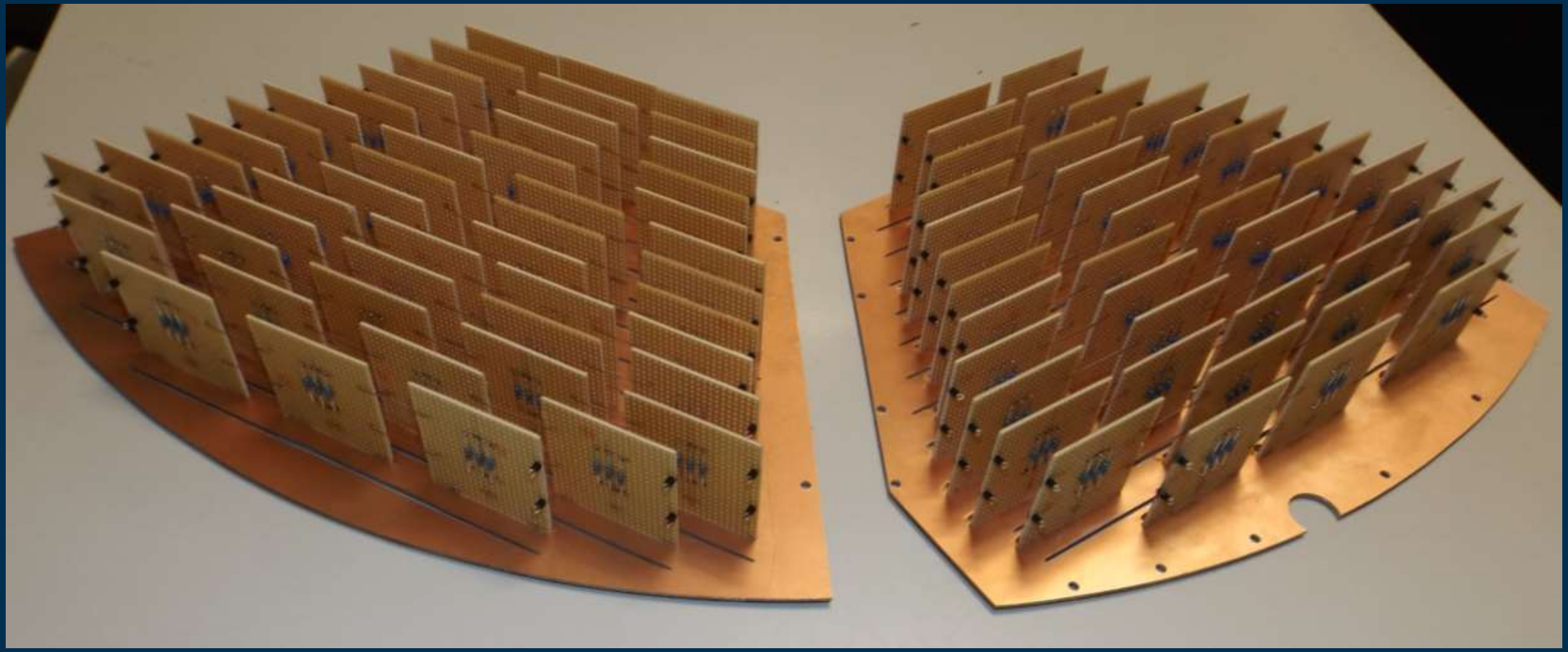

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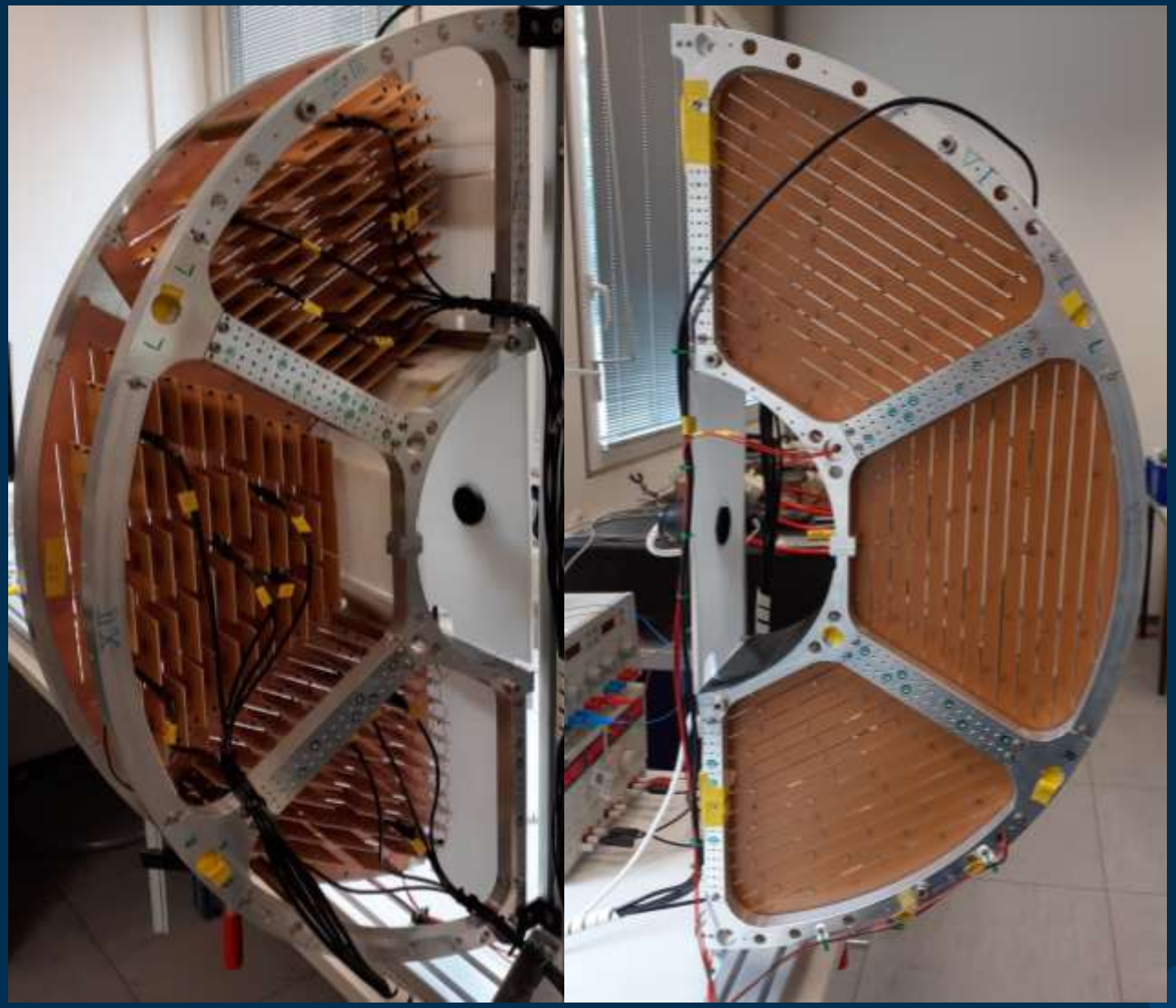

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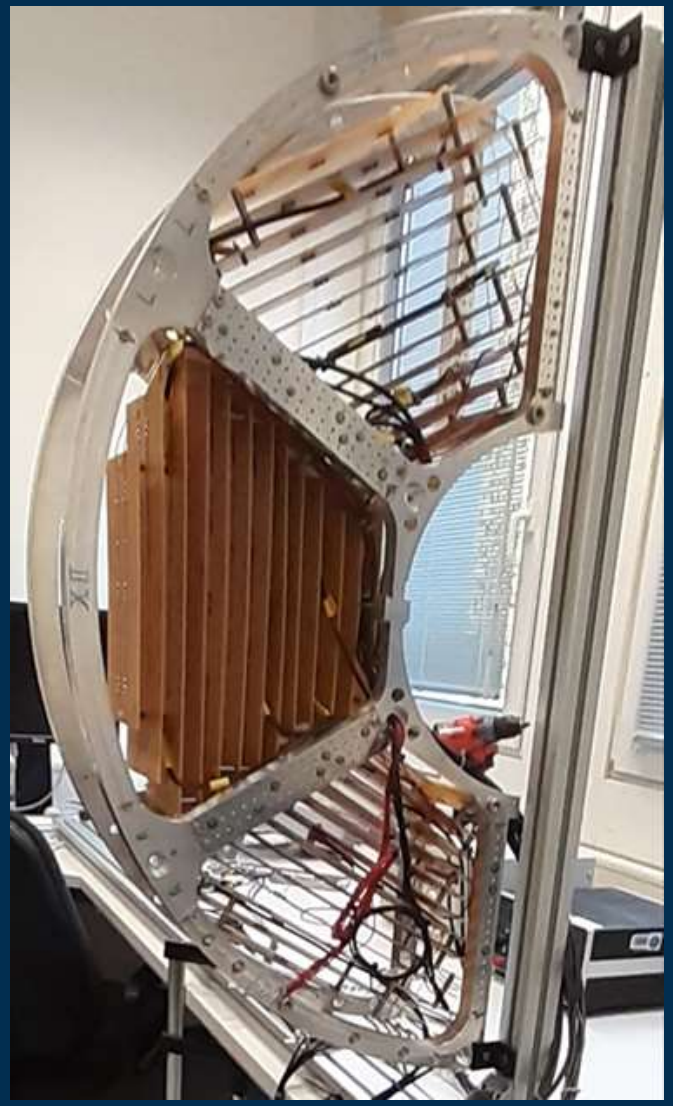

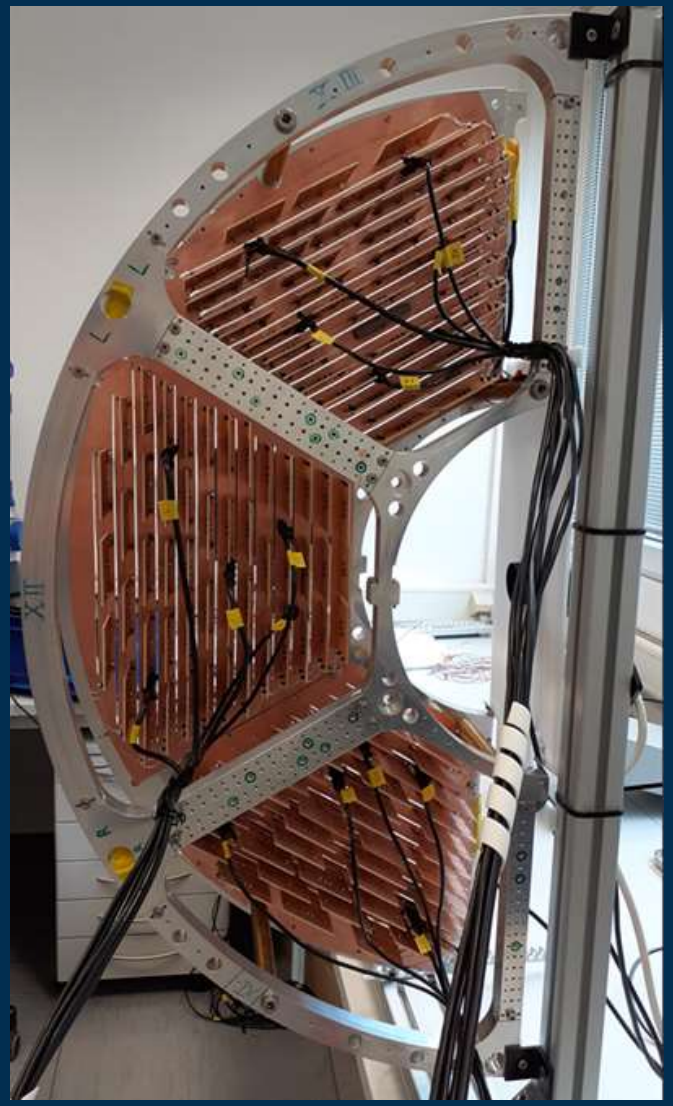

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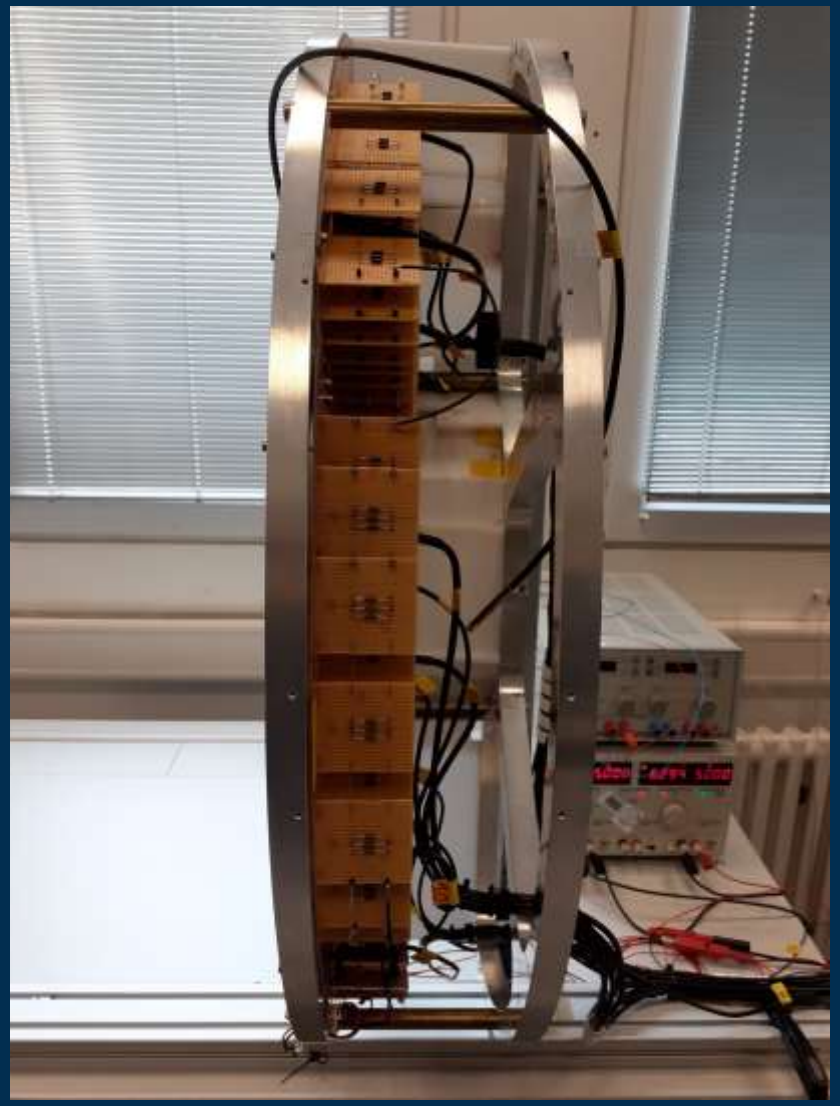

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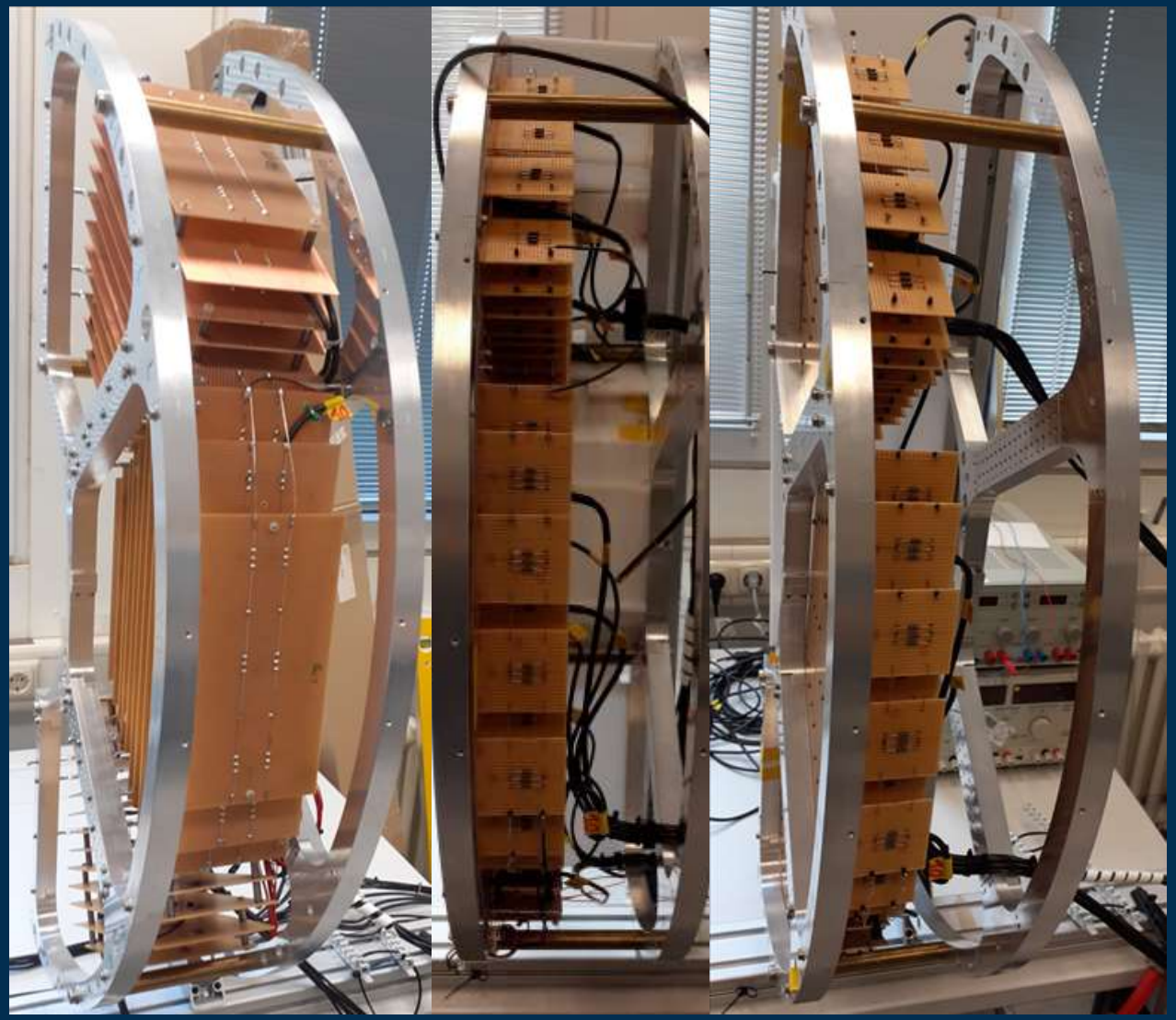

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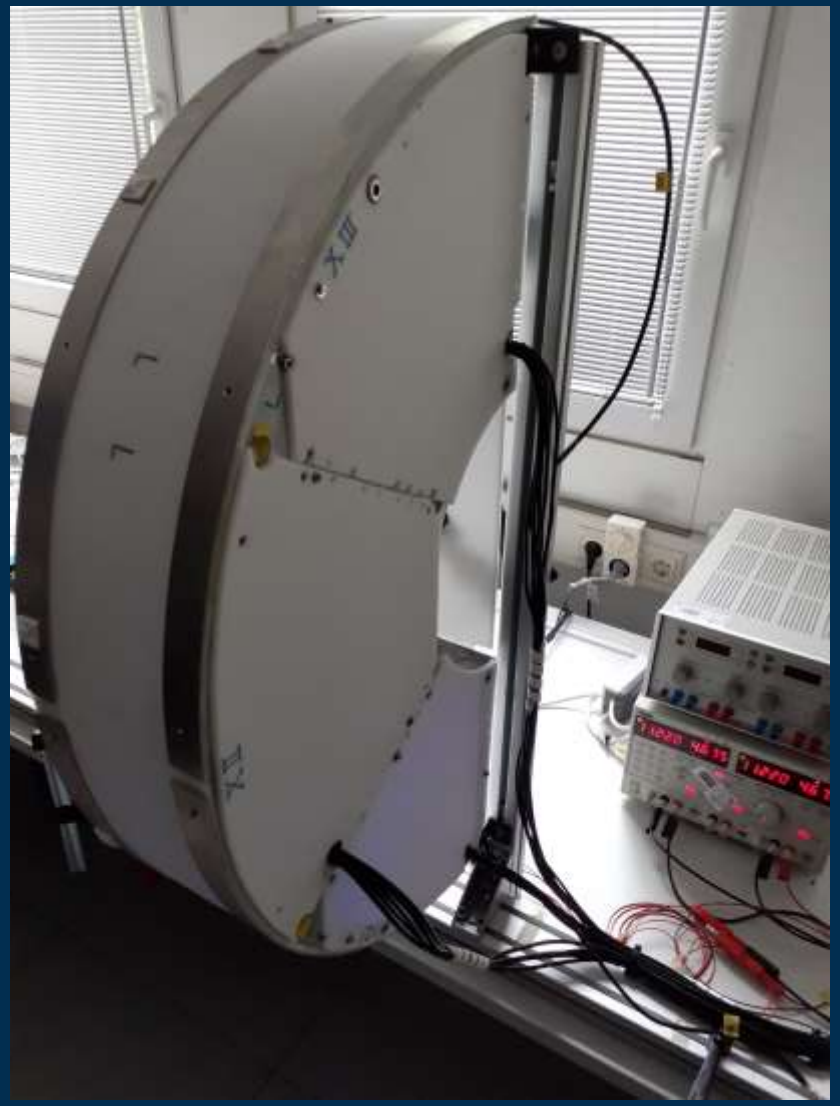
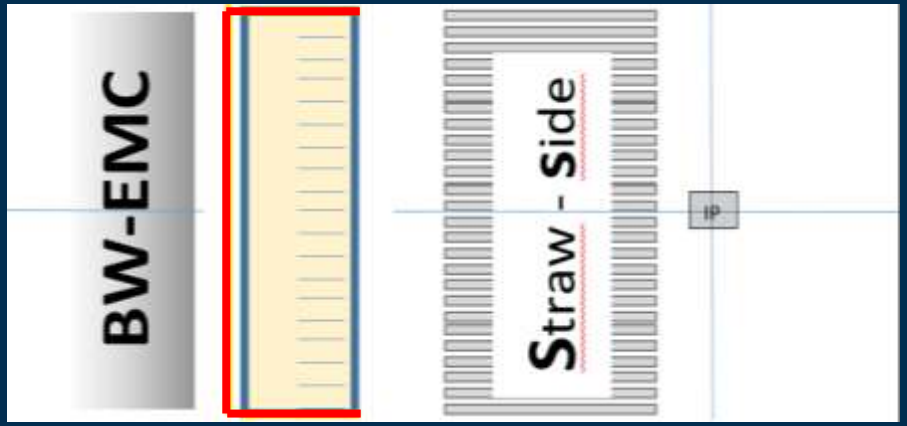
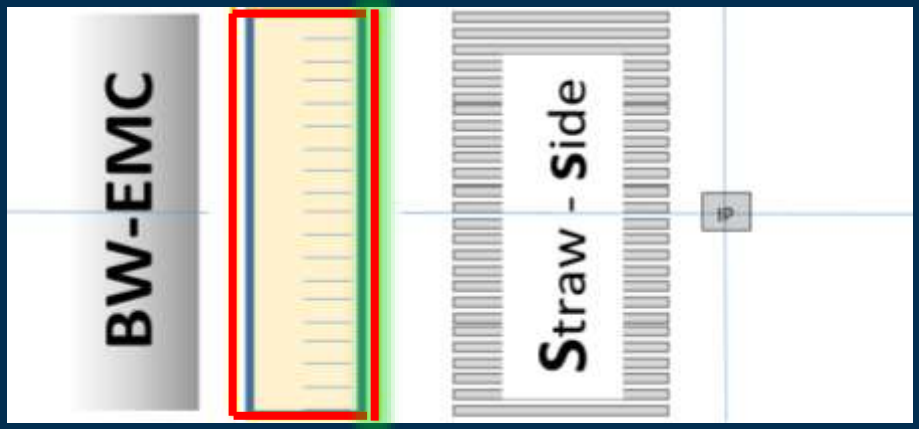


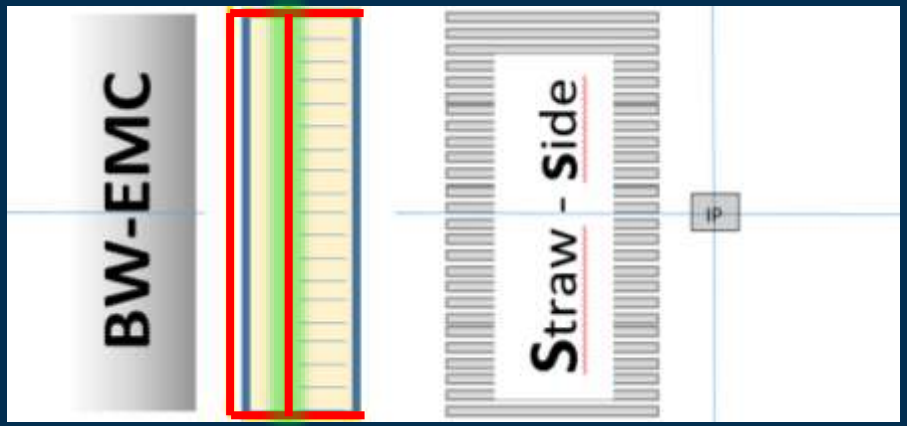
I b) STT-READOUT MOCK-UP V2.0

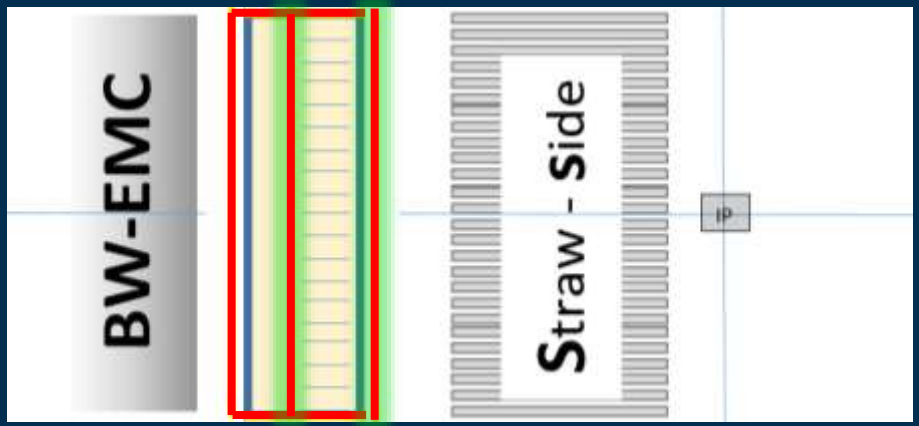
	Setup-Parameter	
I	Electrical -Power	75 W -120 W
II	Flowrate - Cooling	0 – 135 L/min
III	Distribution - Cooling	2 Sets
IV	Isolation - Scene	4 Sets

I b) STT-READOUT MOCK-UP V2.0









I b) STT-READOUT MOCK-UP V2.0

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I b) STT-READOUT MOCK-UP V2.0

| | | |

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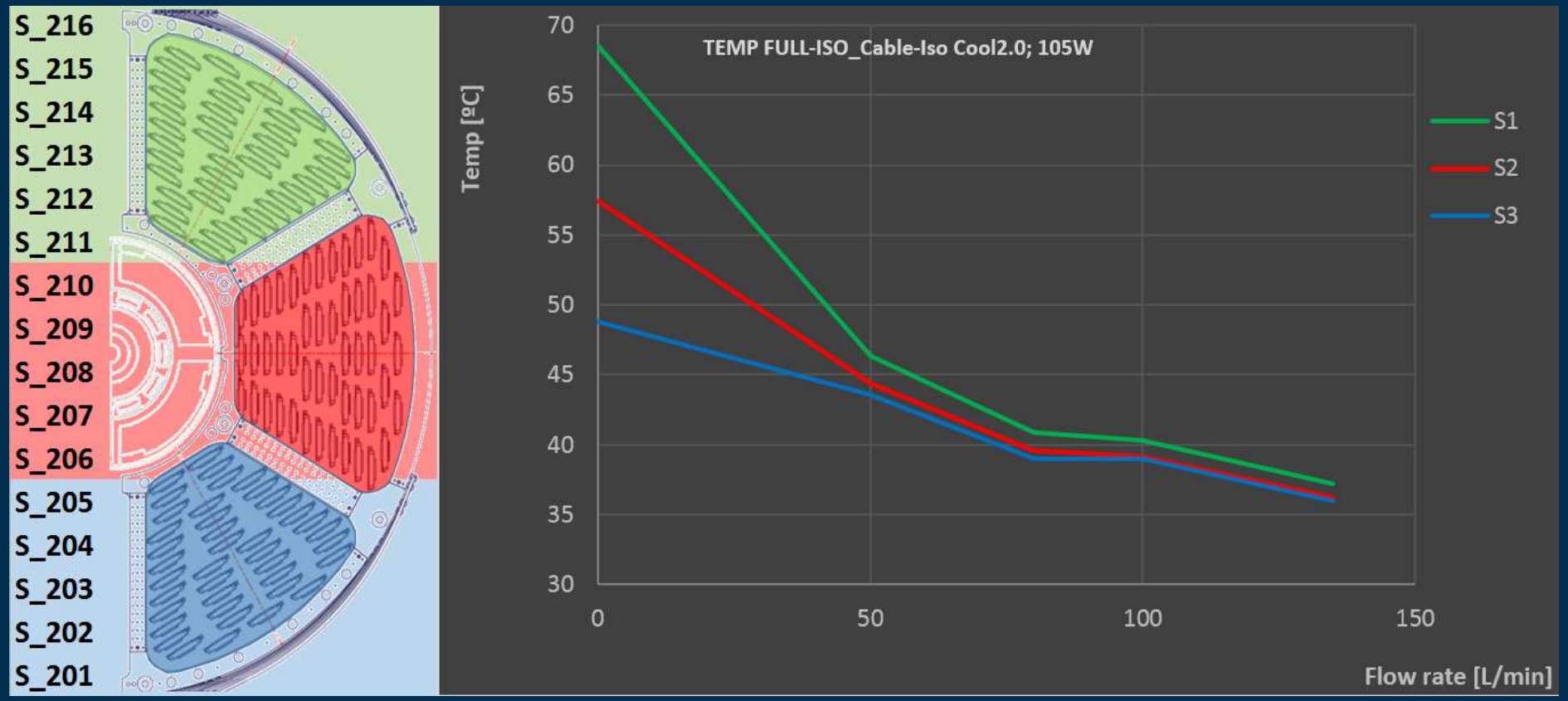

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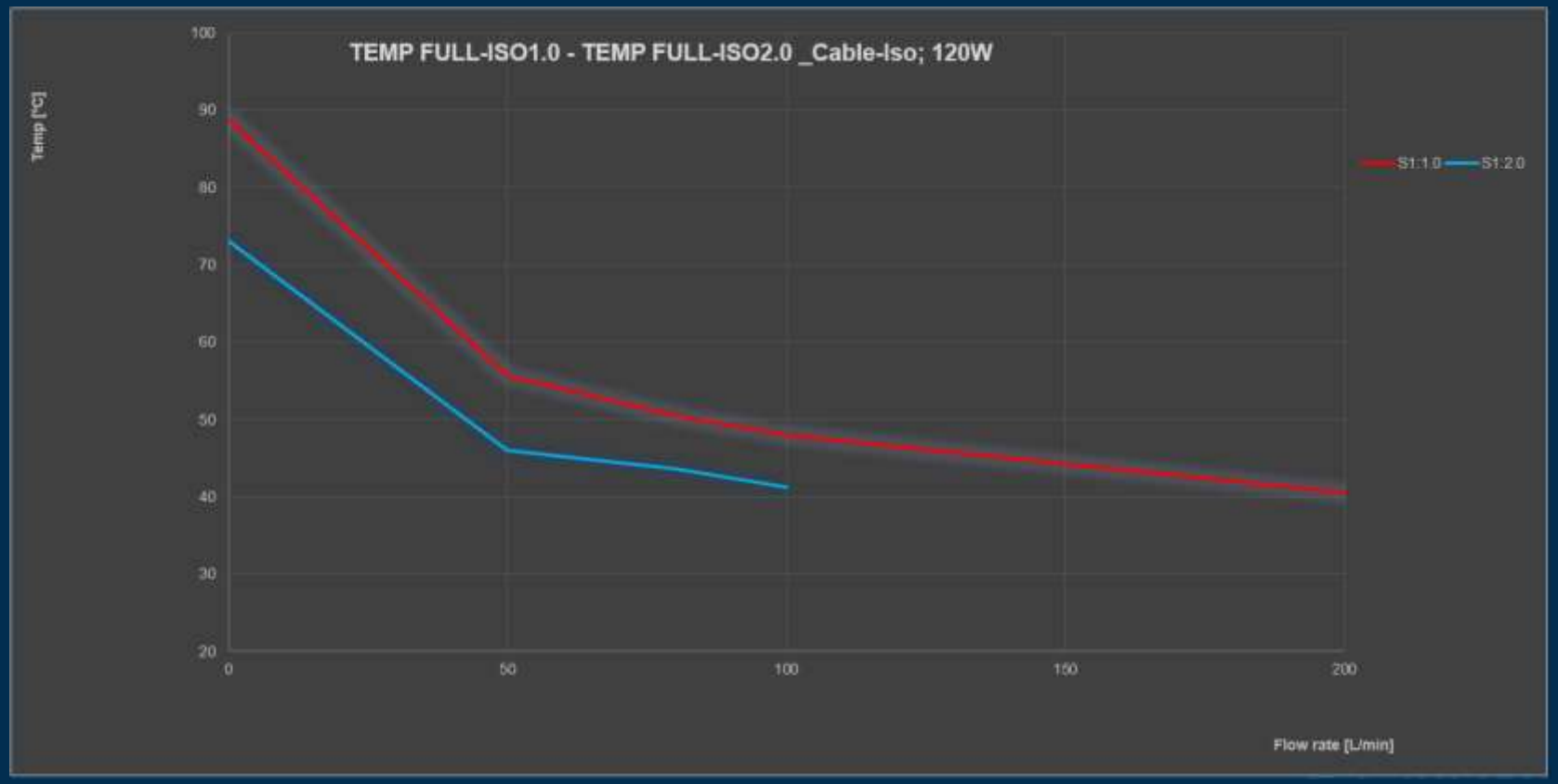

I b) STT-READOUT MOCK-UP V2.0

SUMMARY V2.0

- Cooling of Front to 40°C realizable and stable
- Flow rate optimaziation
- Reduce of nessecary air flow by faktor two

CONTENT

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II STT-Cablechannel

a) Cablechannel V1.0

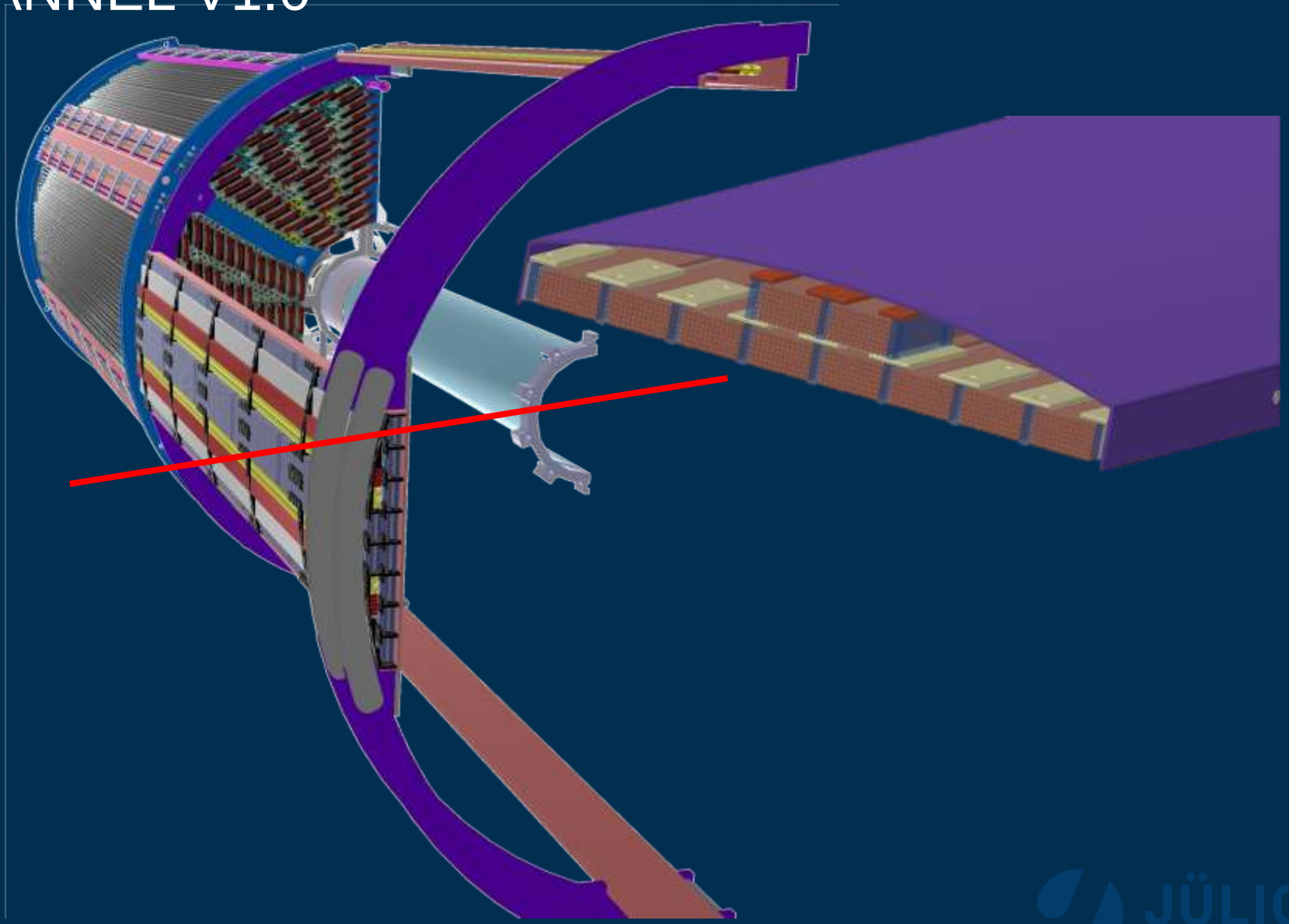
b) Cablechannel V.1.1

III STT-Internal Gaslayout

a) Flashback Gaslayout V.1.0/ V1.1

b) Update Gaslayout V.2.0

I b) STT-CABLECHANNEL V1.0



I b) STT-CABLECHANNEL V1.0

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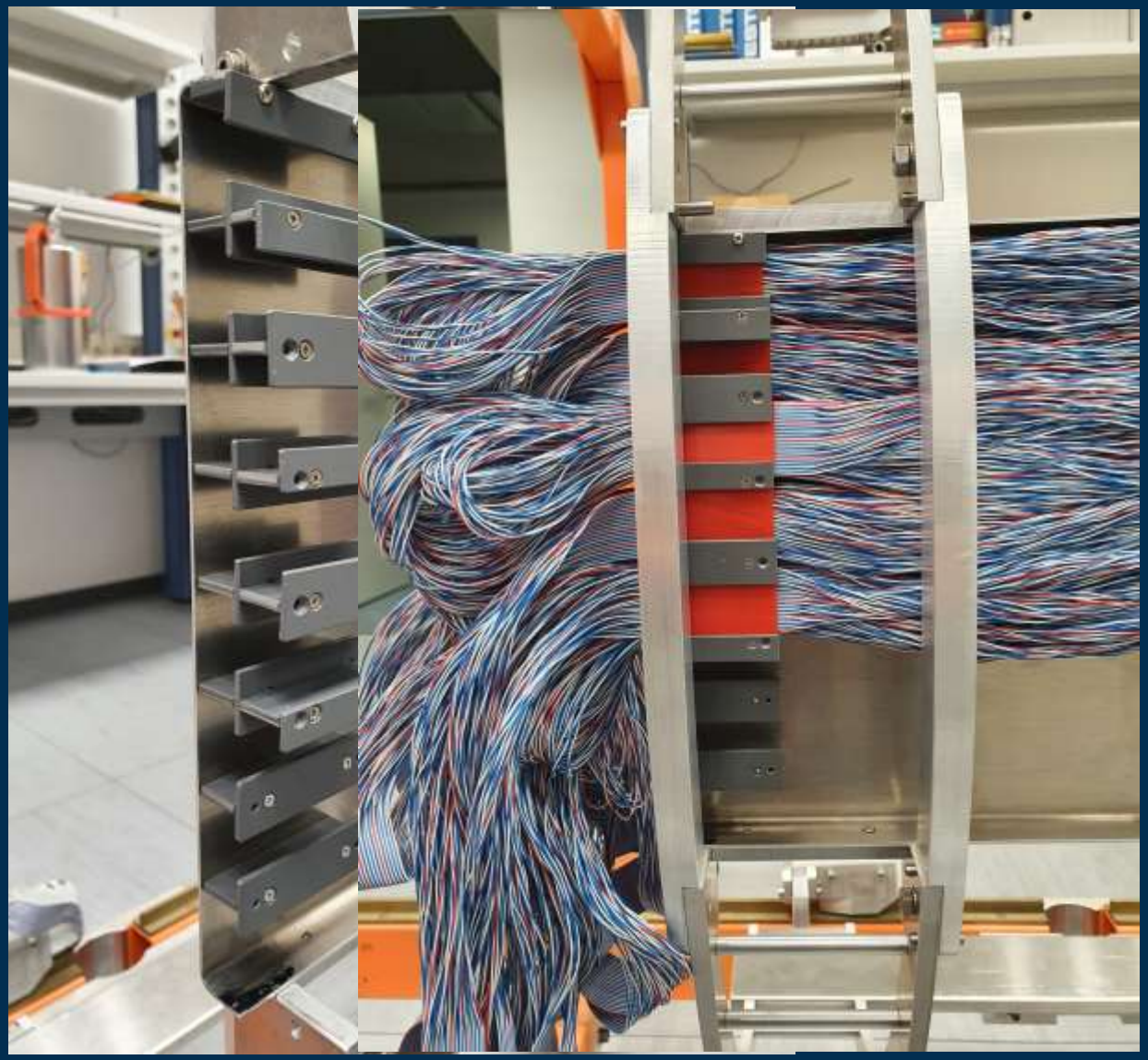

I b) STT-CABLECHANNEL V1.0

II a) STT-CABLECHANNEL V1.0

SUMMARY V1.0

- Cable routing possible
- all signal-cable fit into the crosssection

CONTENT

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II STT-Cablechannel

a) Cablechannel V1.0

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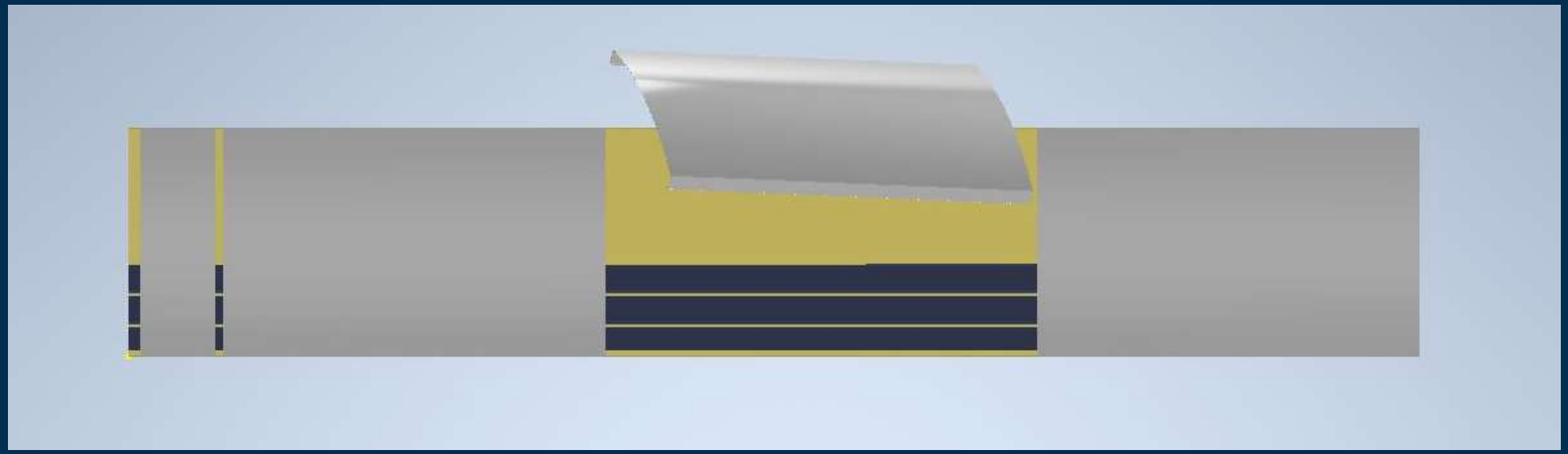
a) Flashback Gaslayout V.1.0/ V1.1

b) Update Gaslayout V.2.0

II a) STT-CABLECHANNEL V1.1



II a) STT-CABLECHANNEL V1.1

CONTENT

I STT-READOUT

a) READOUT Mock-up V1.0

b) READOUT Mock-up V2.0

II STT-Cablechannel

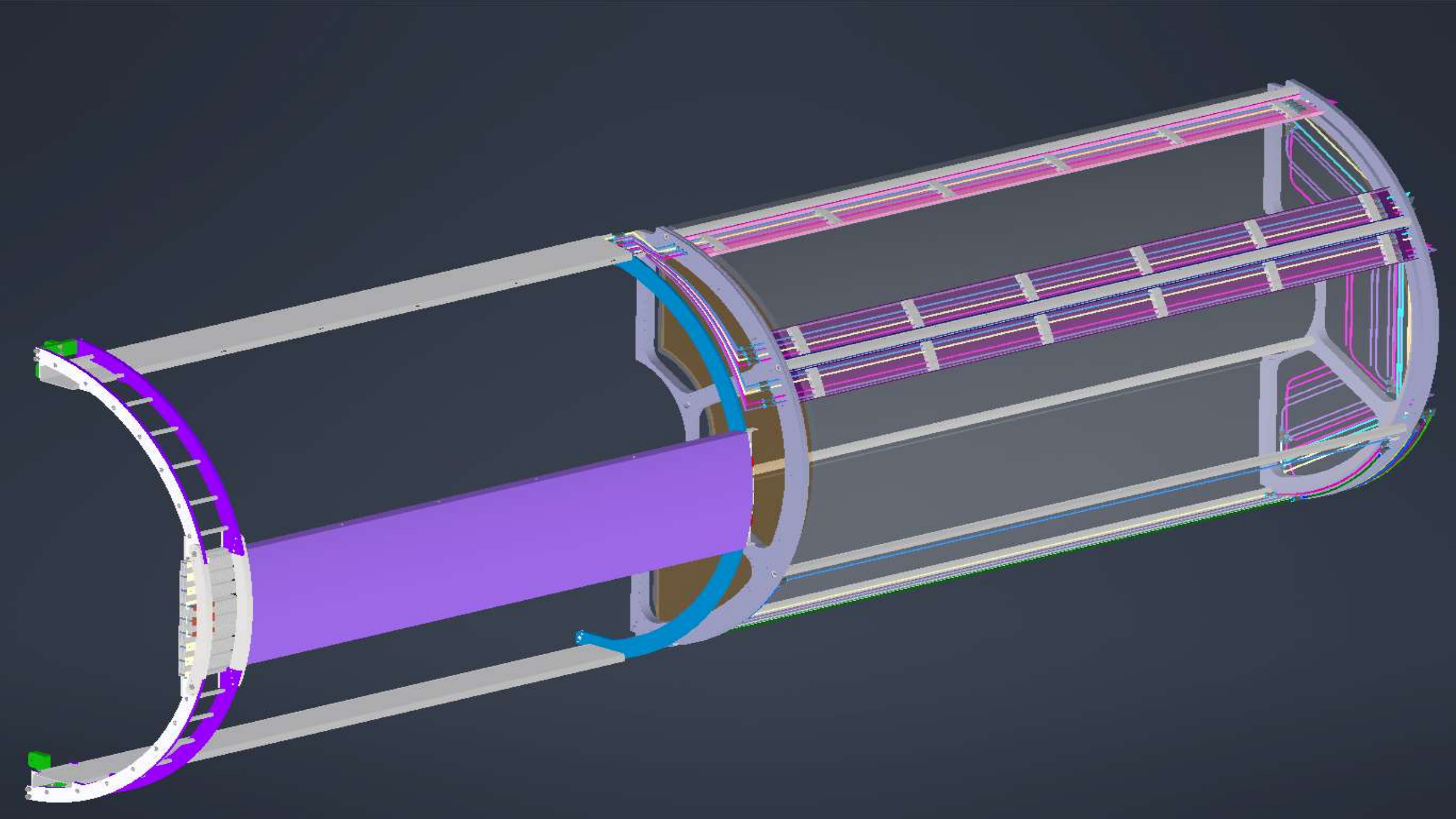
a) Cablechannel V1.0

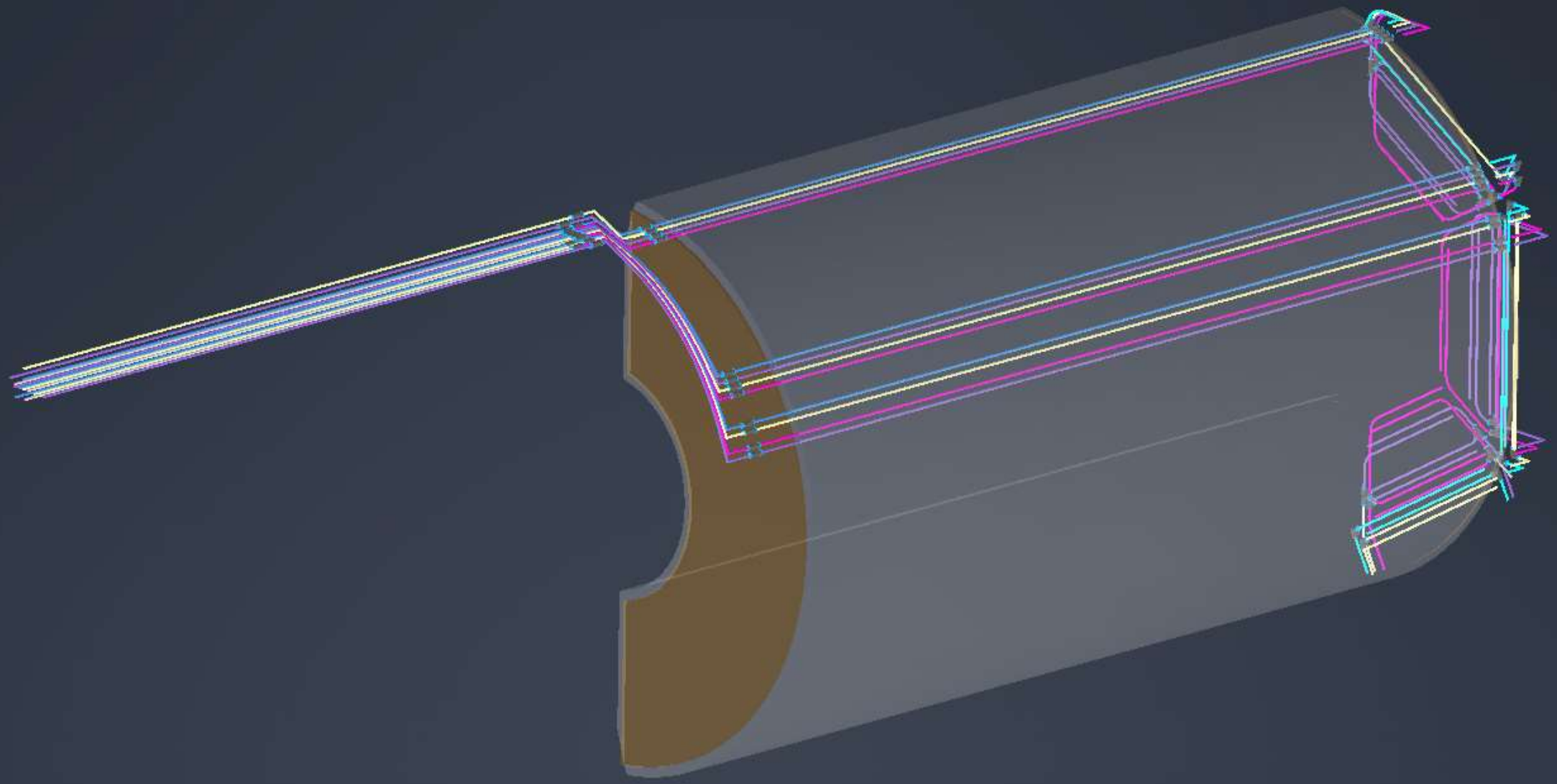
b) Cablechannel V.1.1

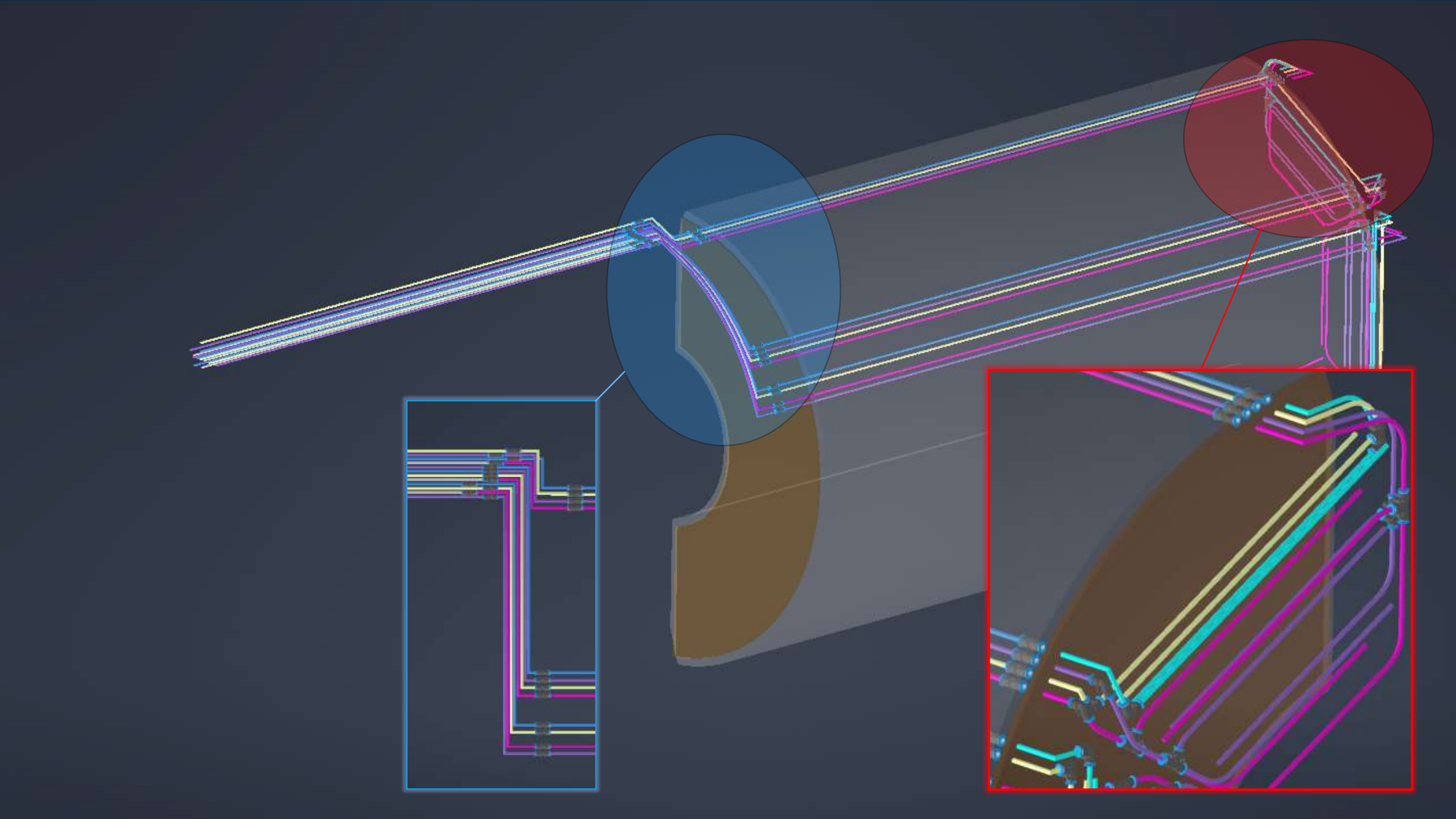
III STT-Internal Gaslayout

a) Gaslayout V1.0/ V1.1

b) Gaslayout V.2.0







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a) Cablechannel V1.0

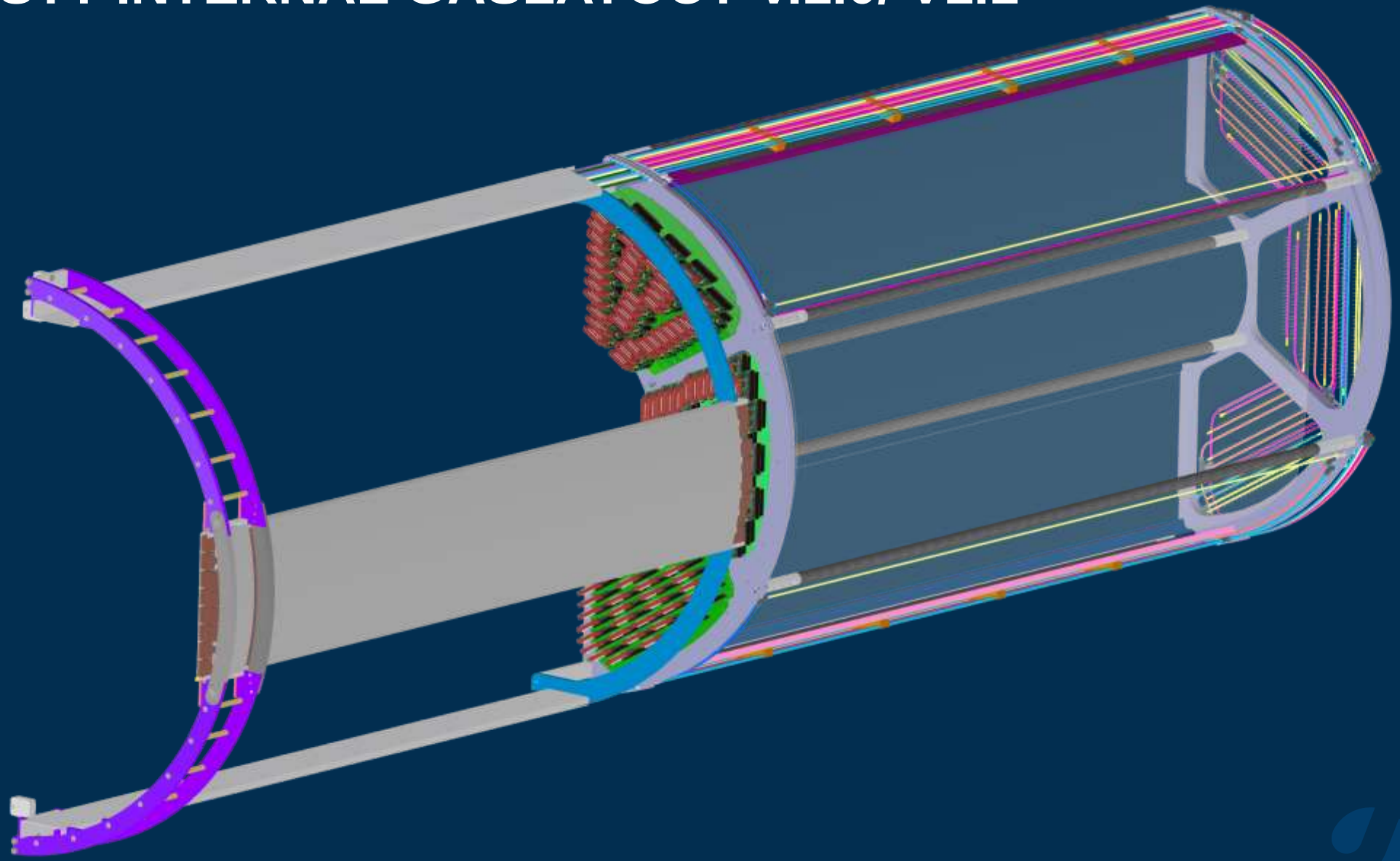
b) Cablechannel V.1.1

III STT-Internal Gaslayout

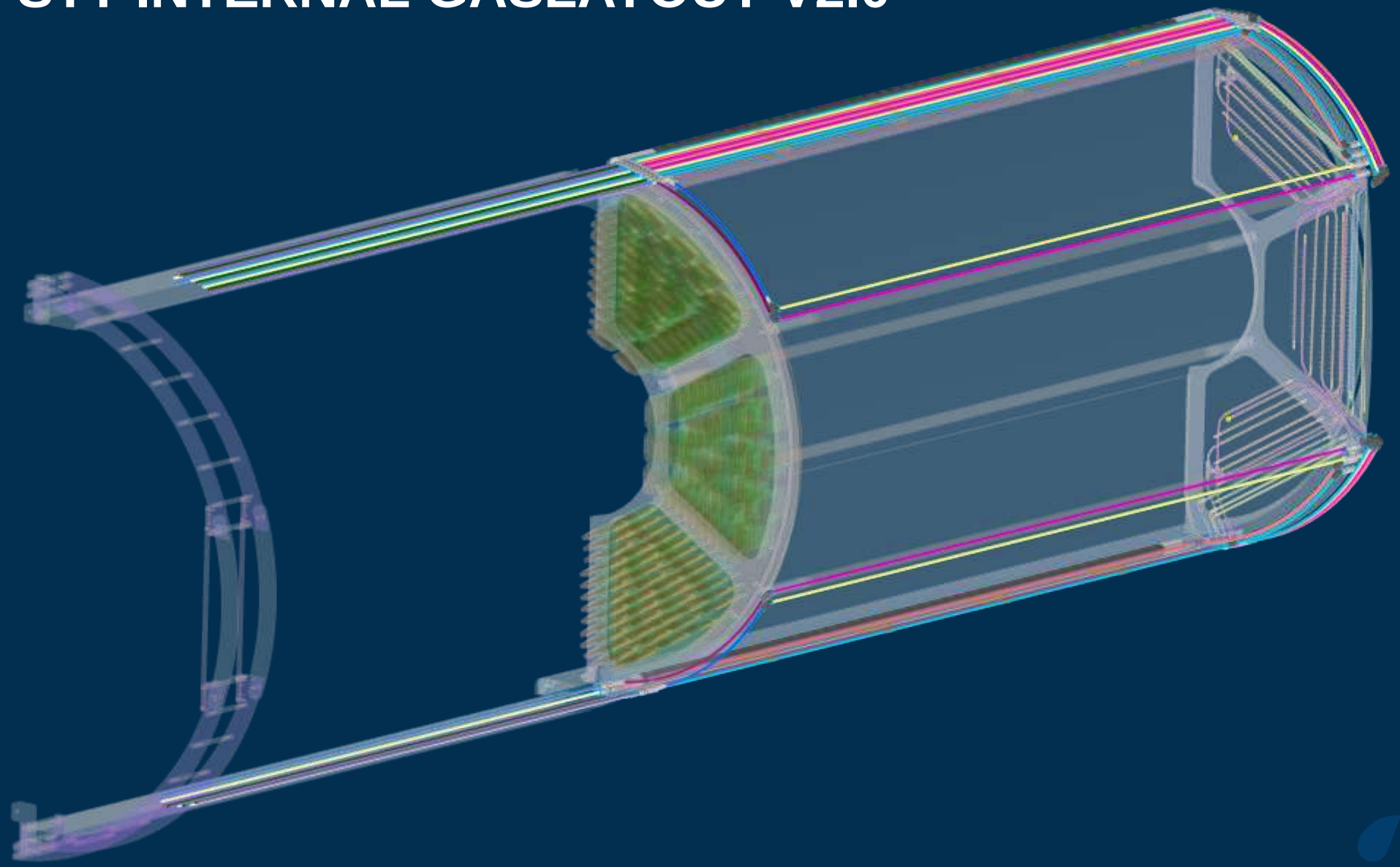
a) Gaslayout V1.0/ V1.1

b) Gaslayout V2.0

II a) STT-INTERNAL GASLAYOUT V.1.0/ V1.1



II a) STT-INTERNAL GASLAYOUT V2.0



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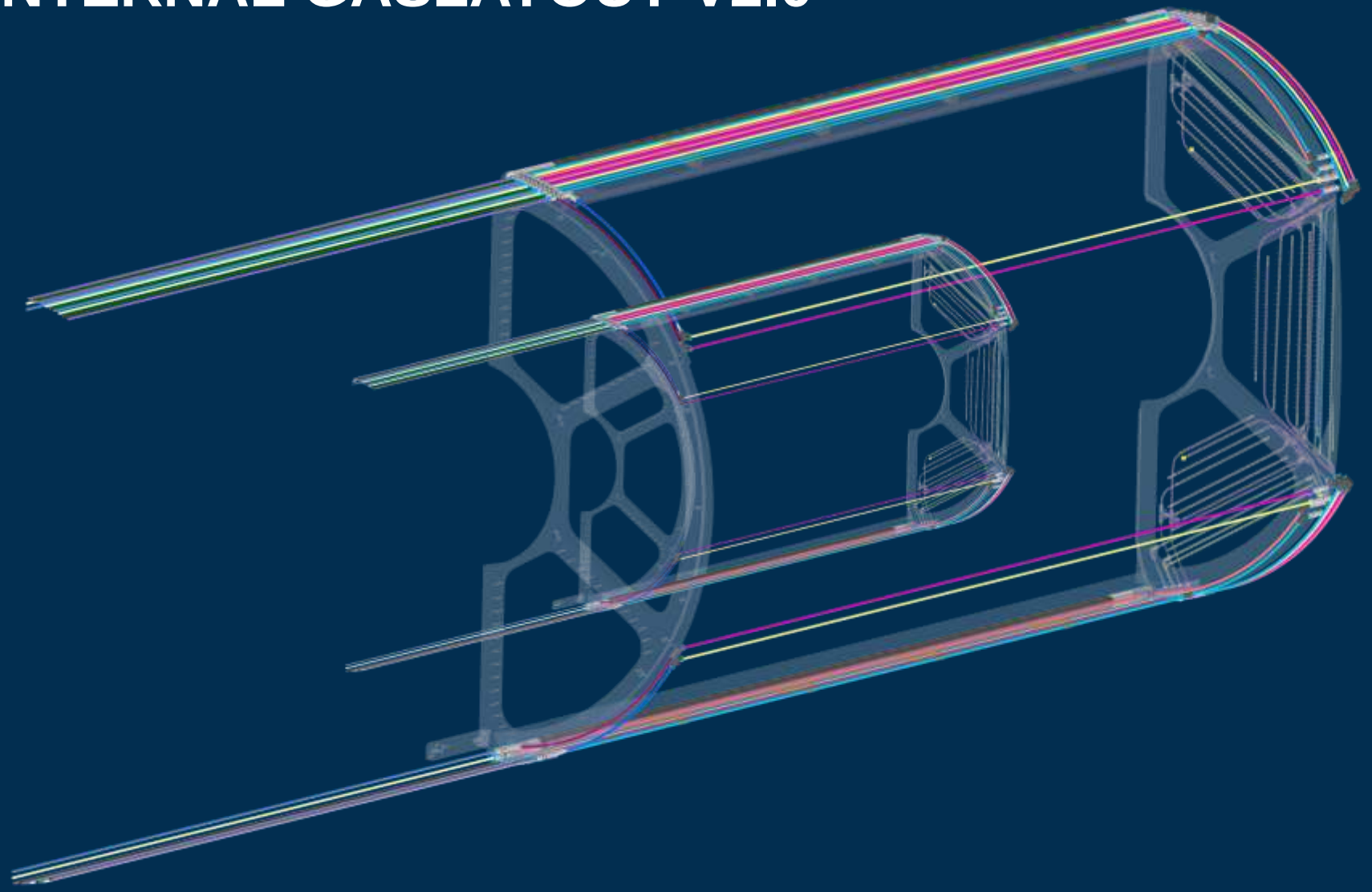

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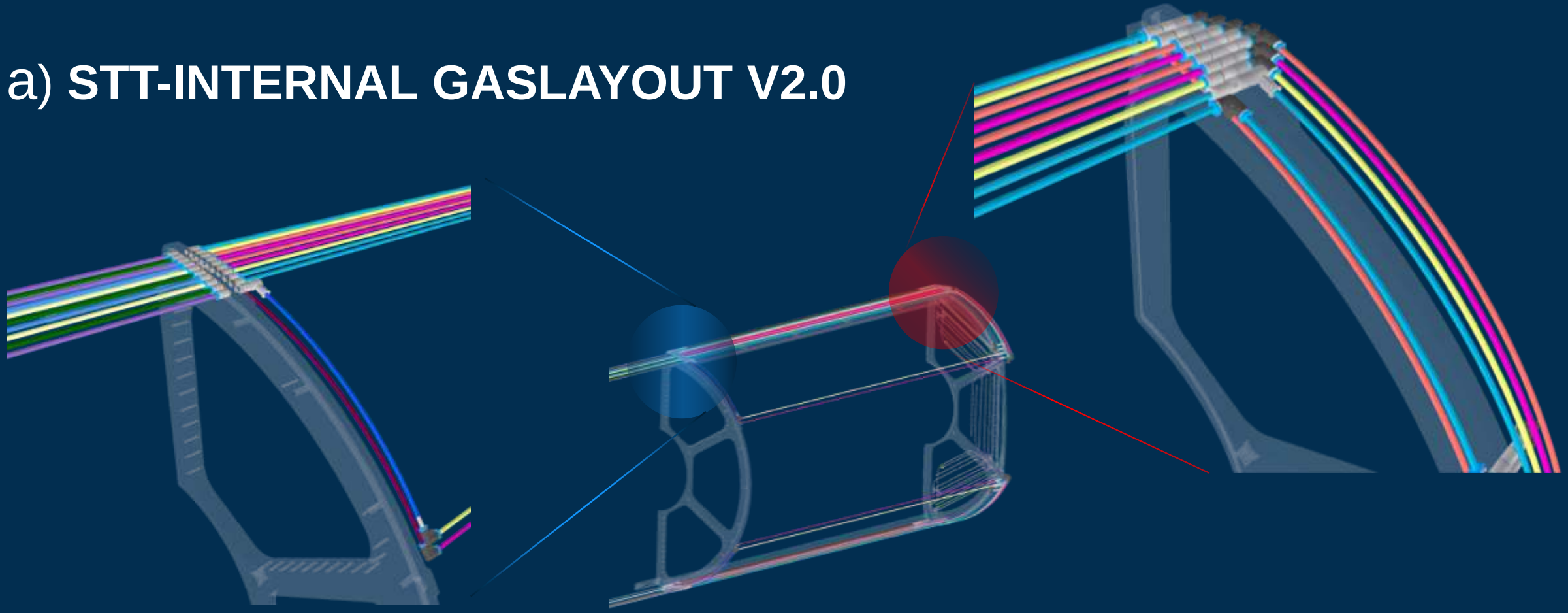
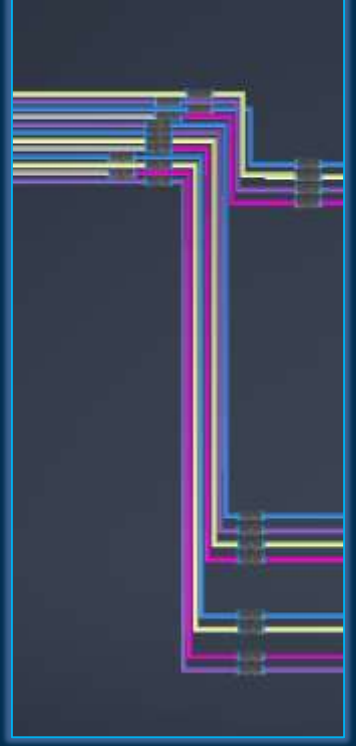
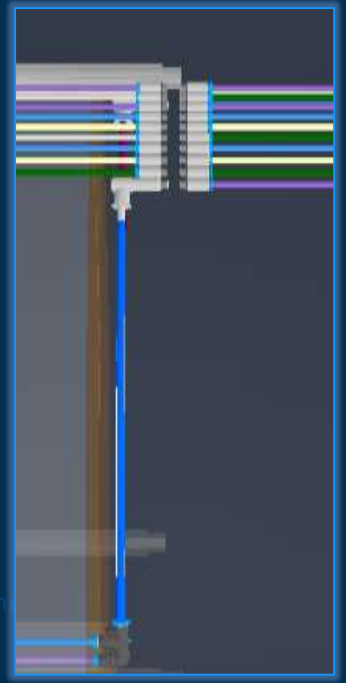


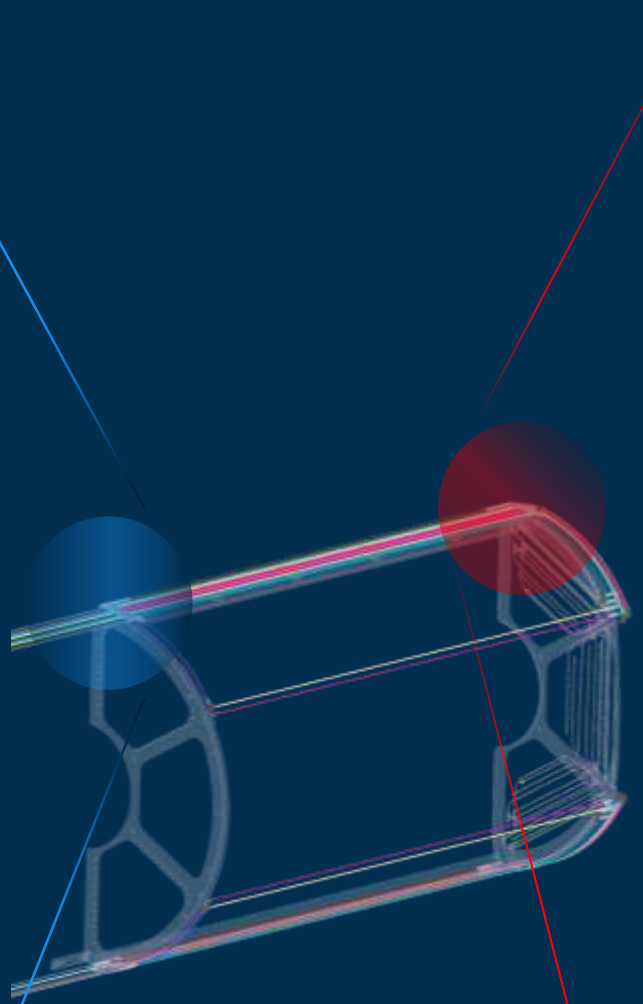
II a)

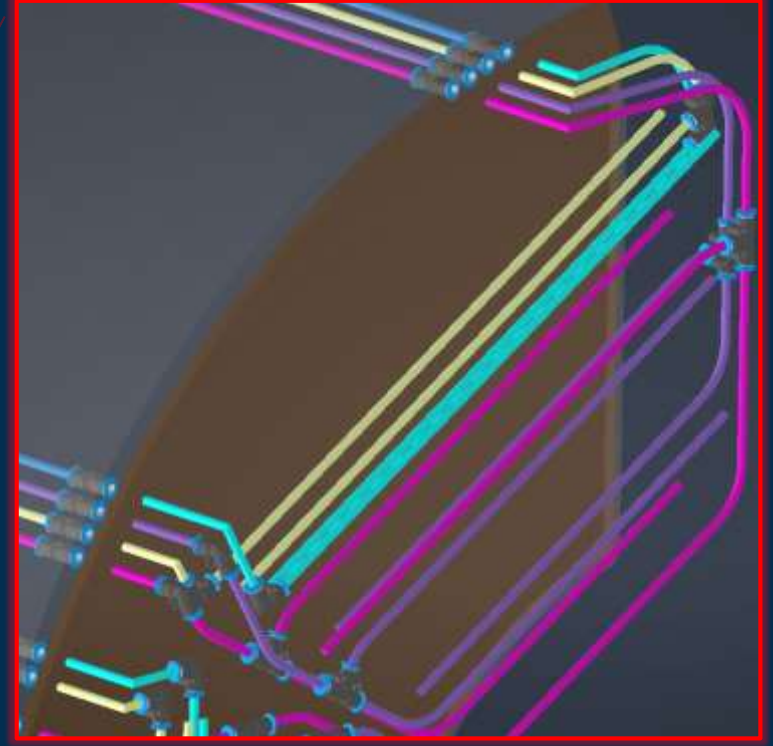
2020

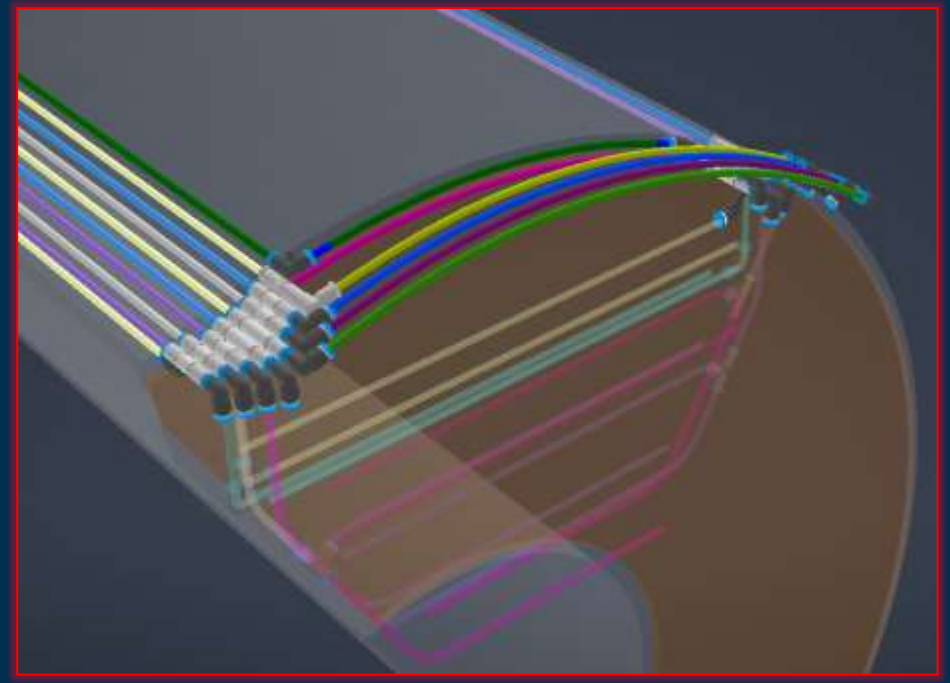


2021









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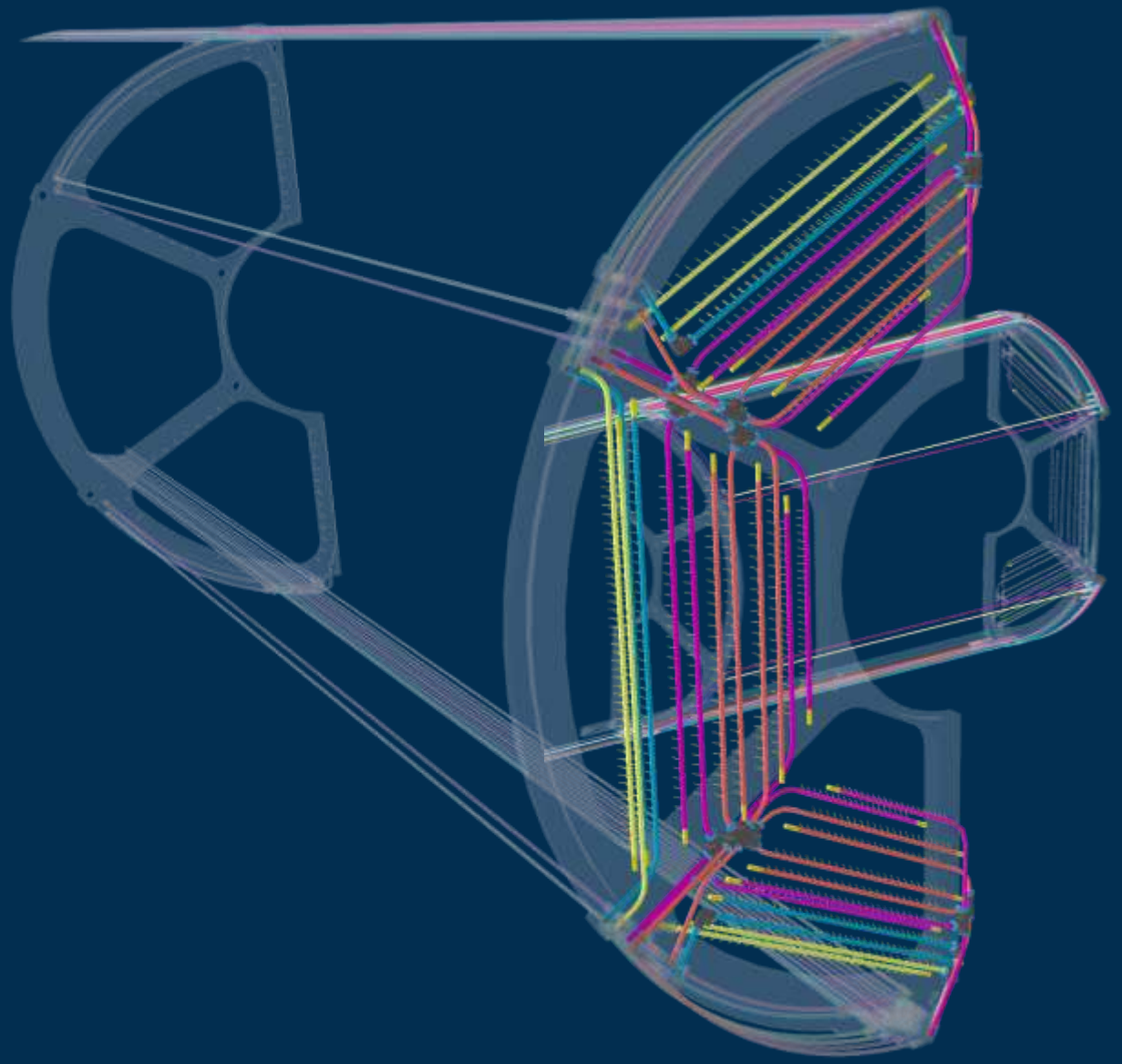

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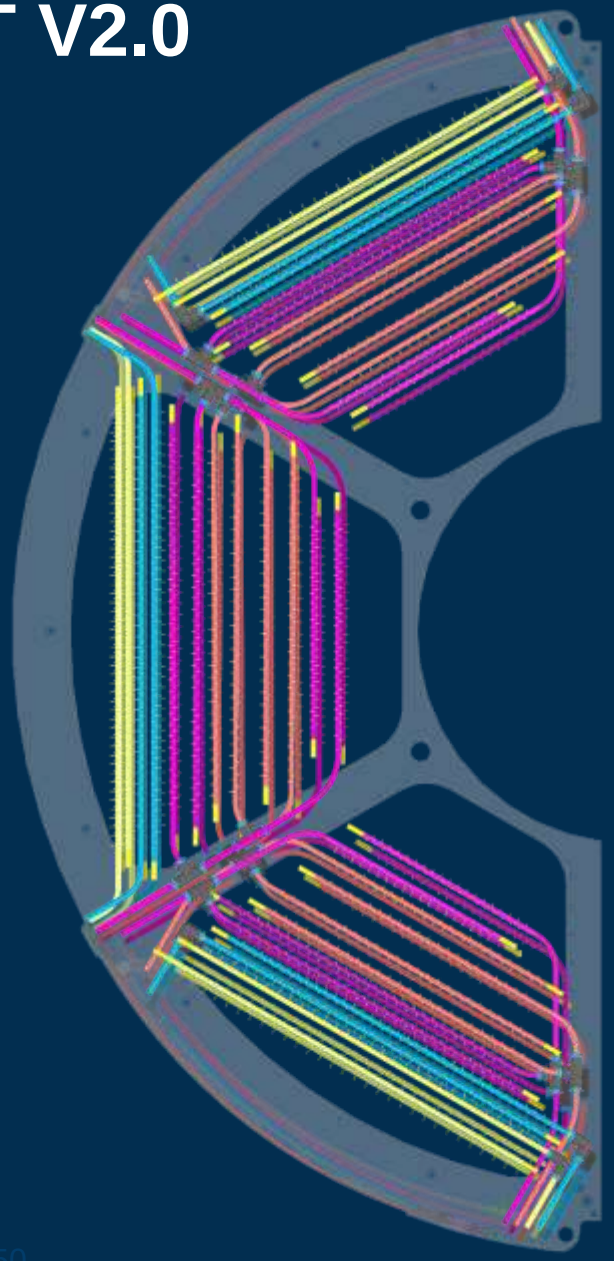

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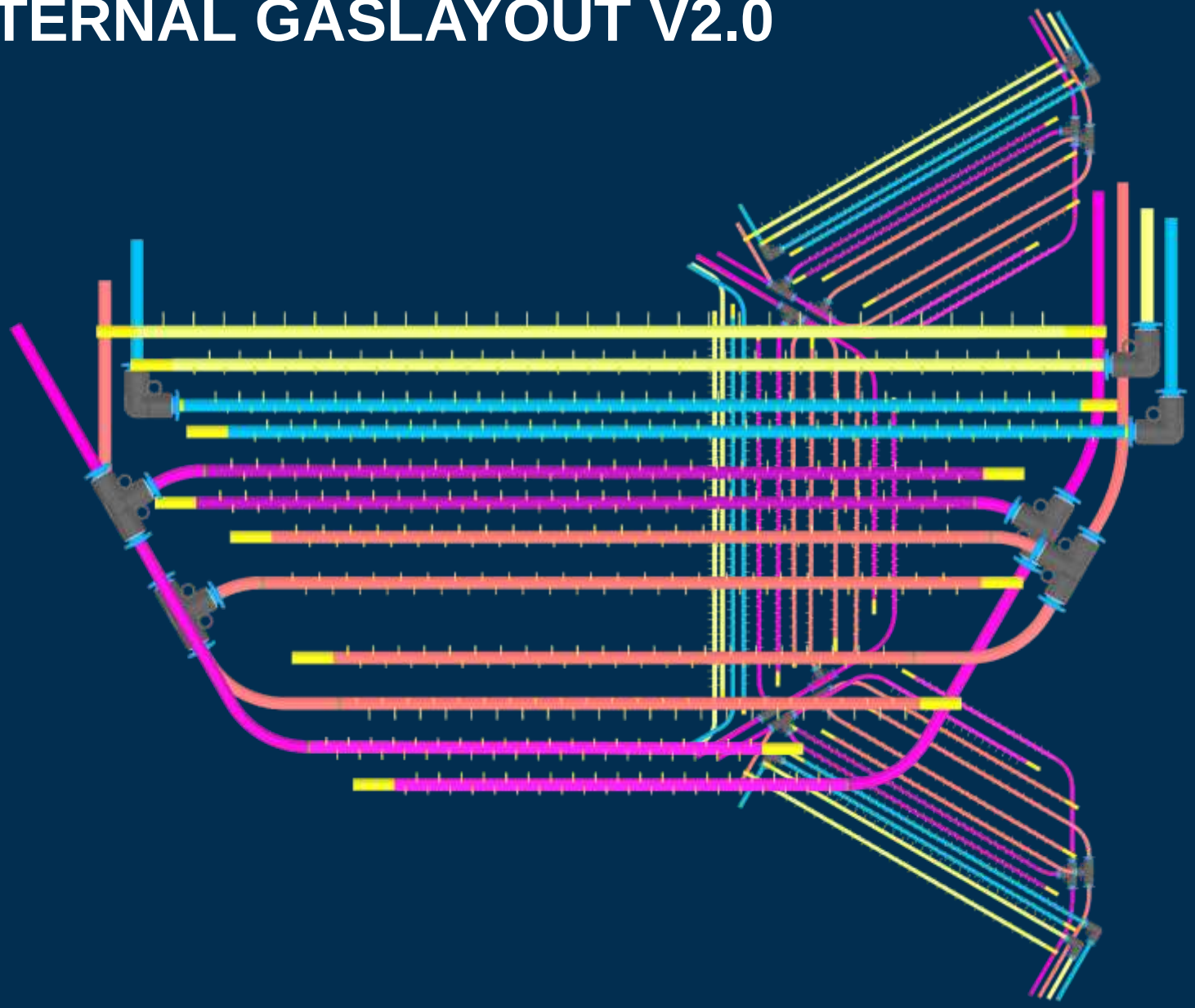

CONCLUSION

- Cooling conzept validated
- stable temperatur @ FE-Boards
- Reduce Air flow

- chable-channel conzept validated
- Test for cablefitting are successfully done
- Complete Cablechannel is buildet and available

- Redisign of the the internal gas layout
- Eleminate all solder connections/joints @ gaspipes

THANKS