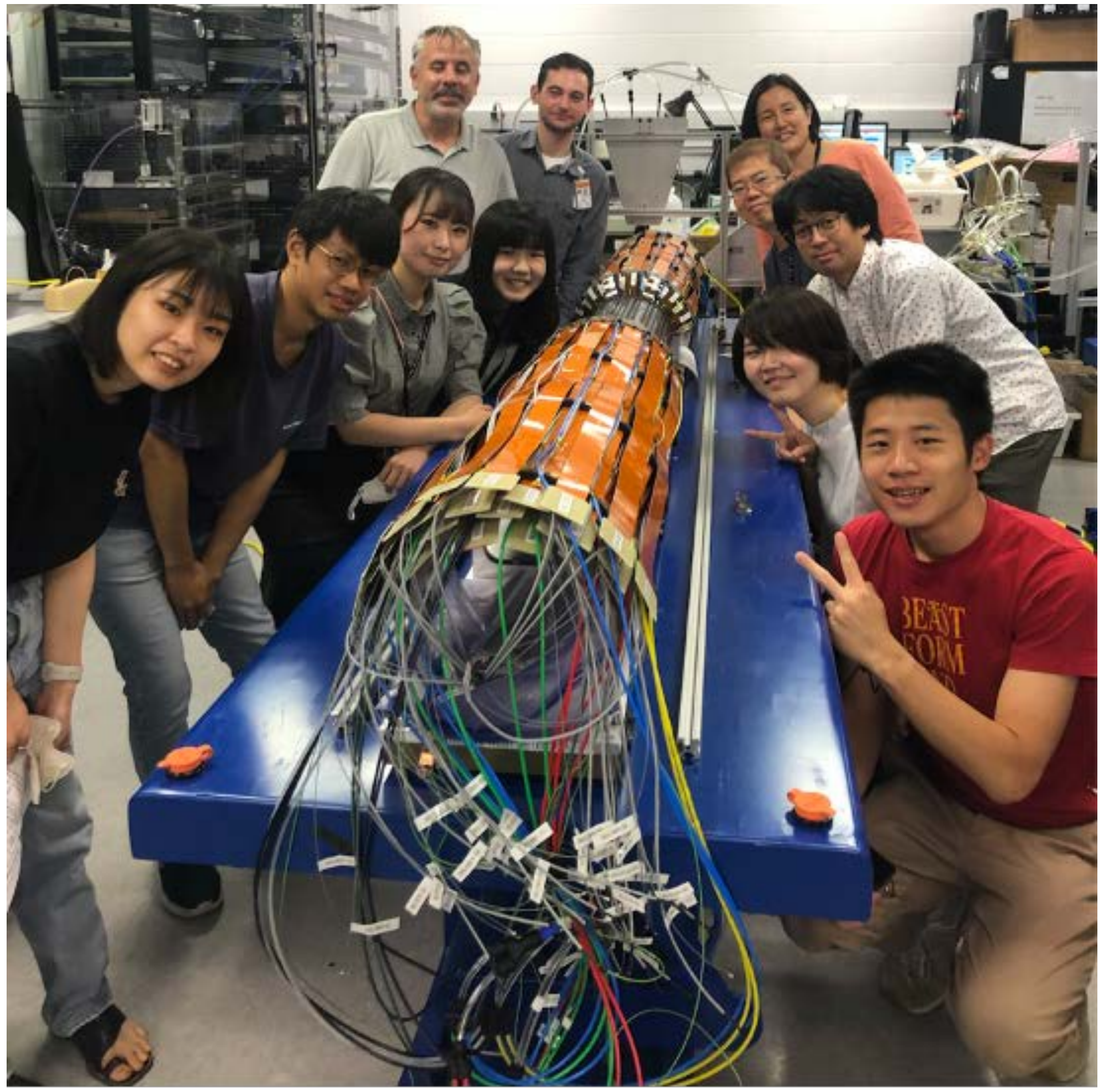
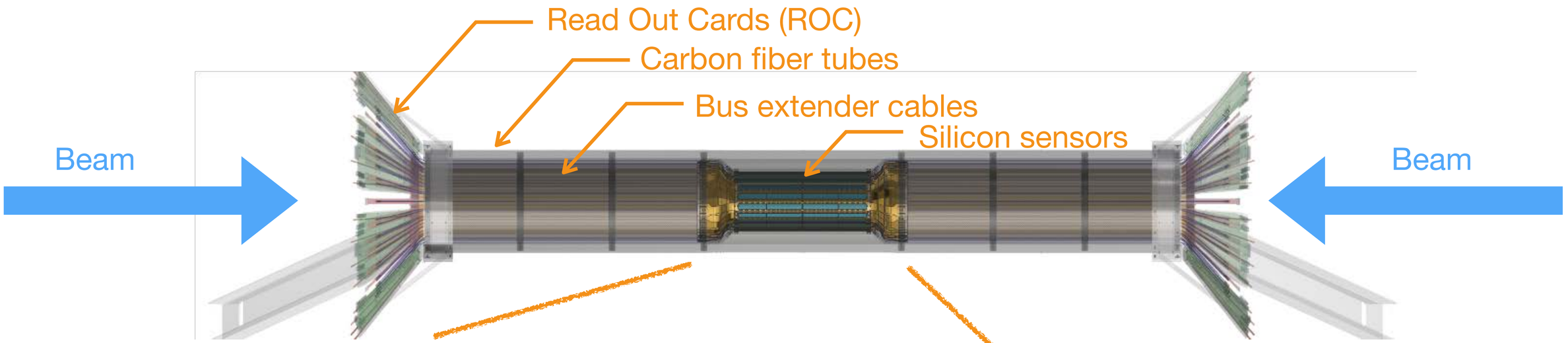


Status of the INTT Barrel construction

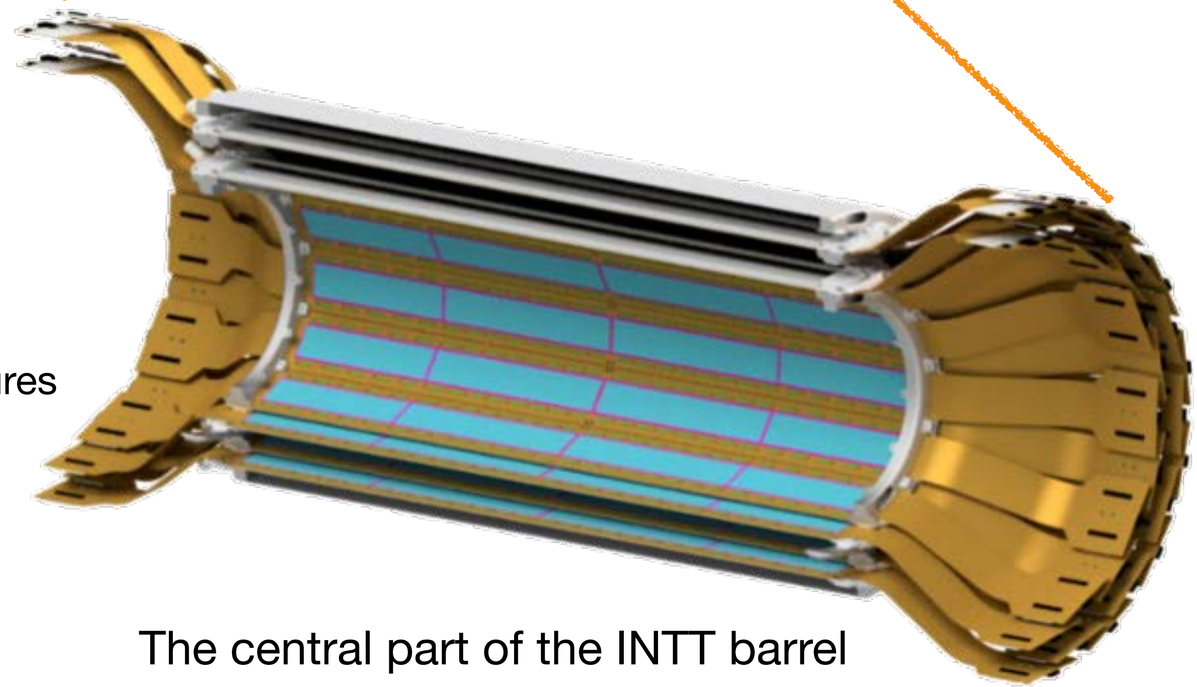
G. Nukazuka (RBRC)

The INTT barrel

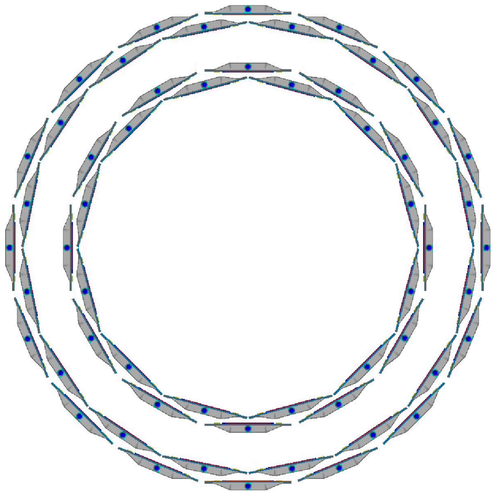


INTT barrel consists of

- the central part (ladders)
- bus extender cables
- ReadOut Card & support structures
- Carbon fiber tubes



The central part of the INTT barrel



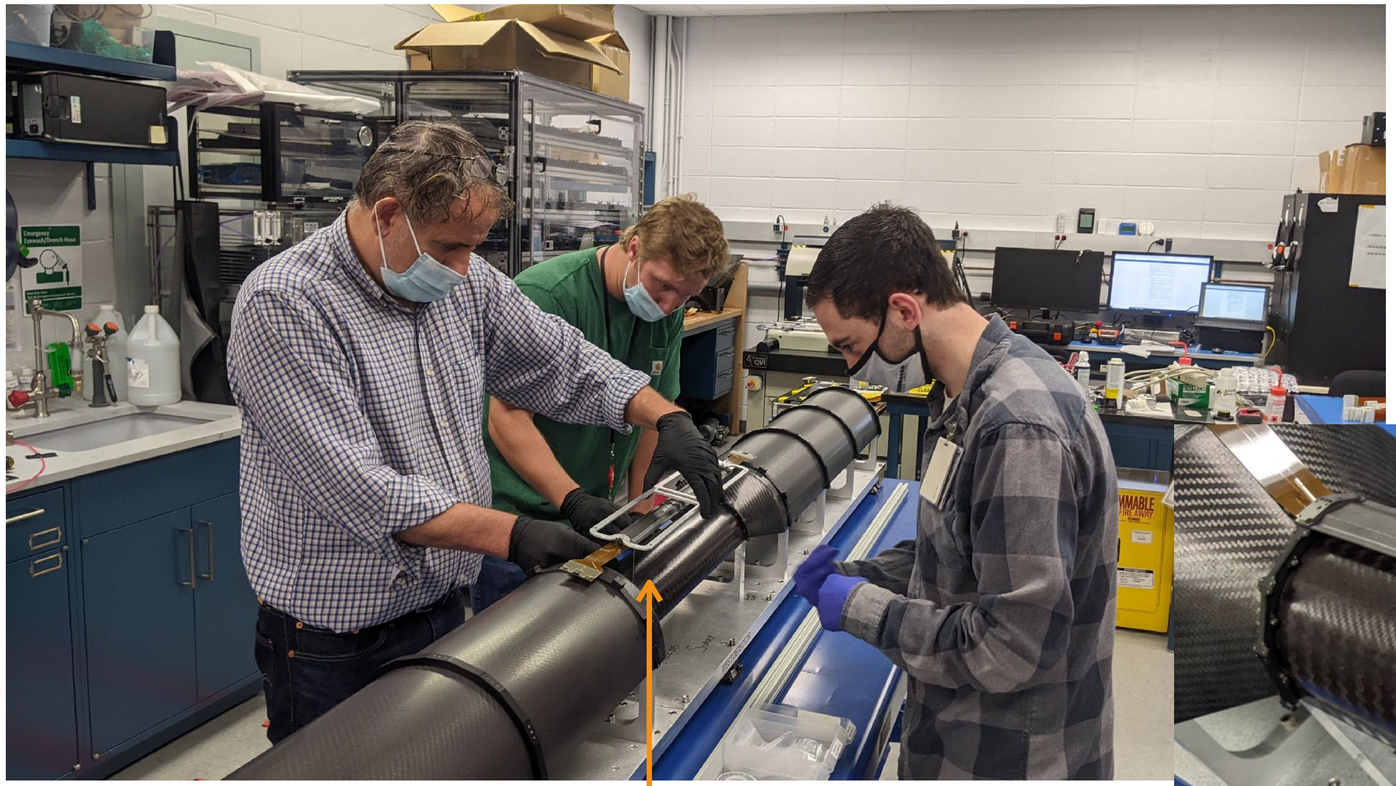
Cross-section

Construction of the INTT barrel

Supporting structure for the construction

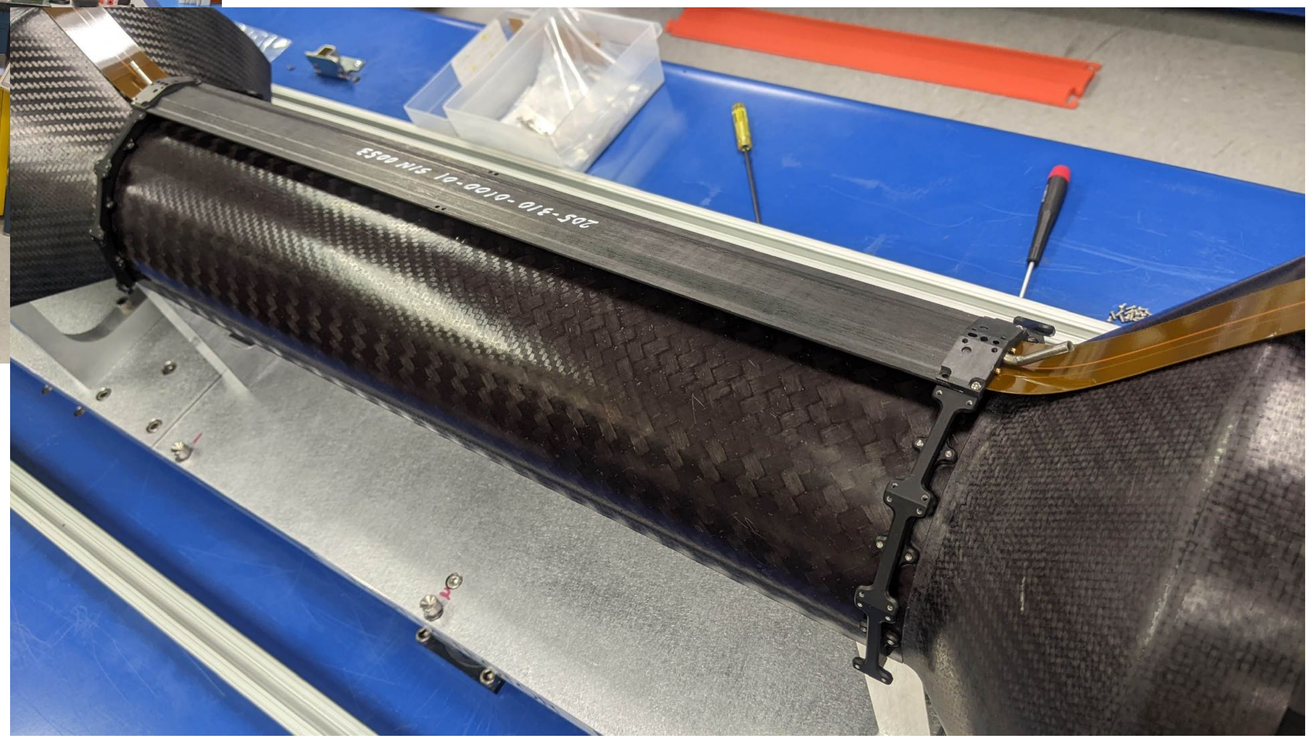
The inner surfaces made of CFRP

Construction of the INTT barrel

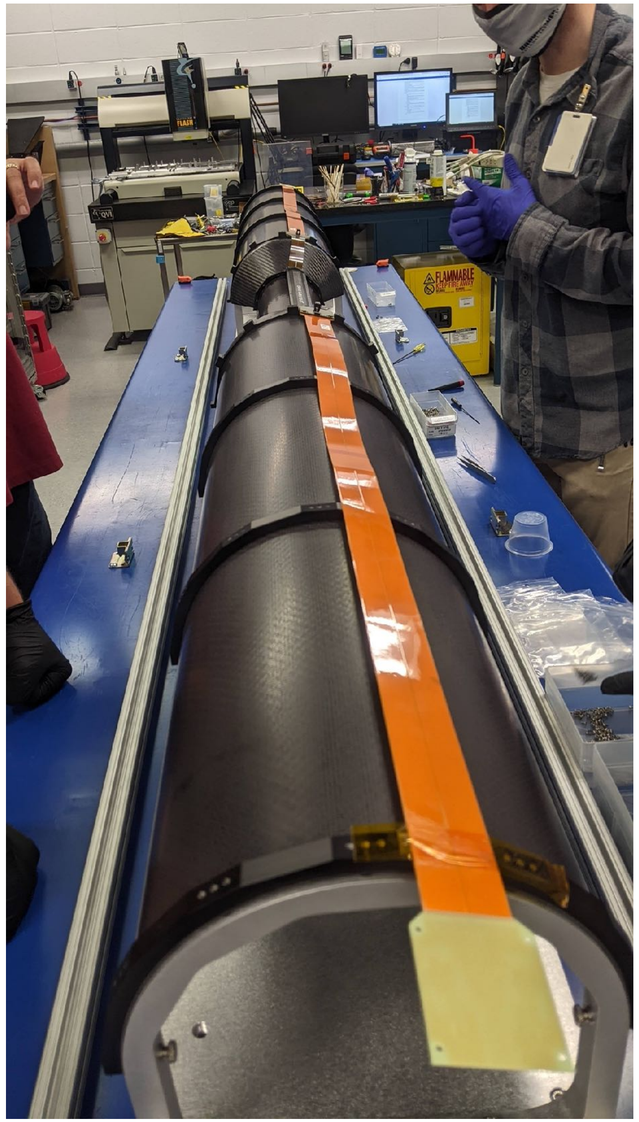


The first assembling

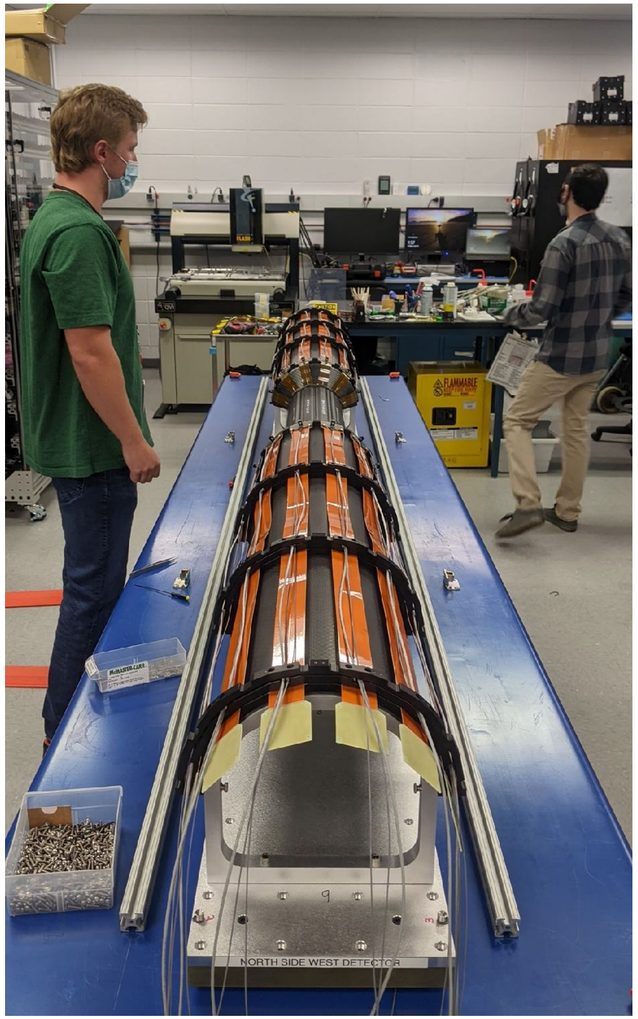
After the first installation



Construction of the INTT barrel

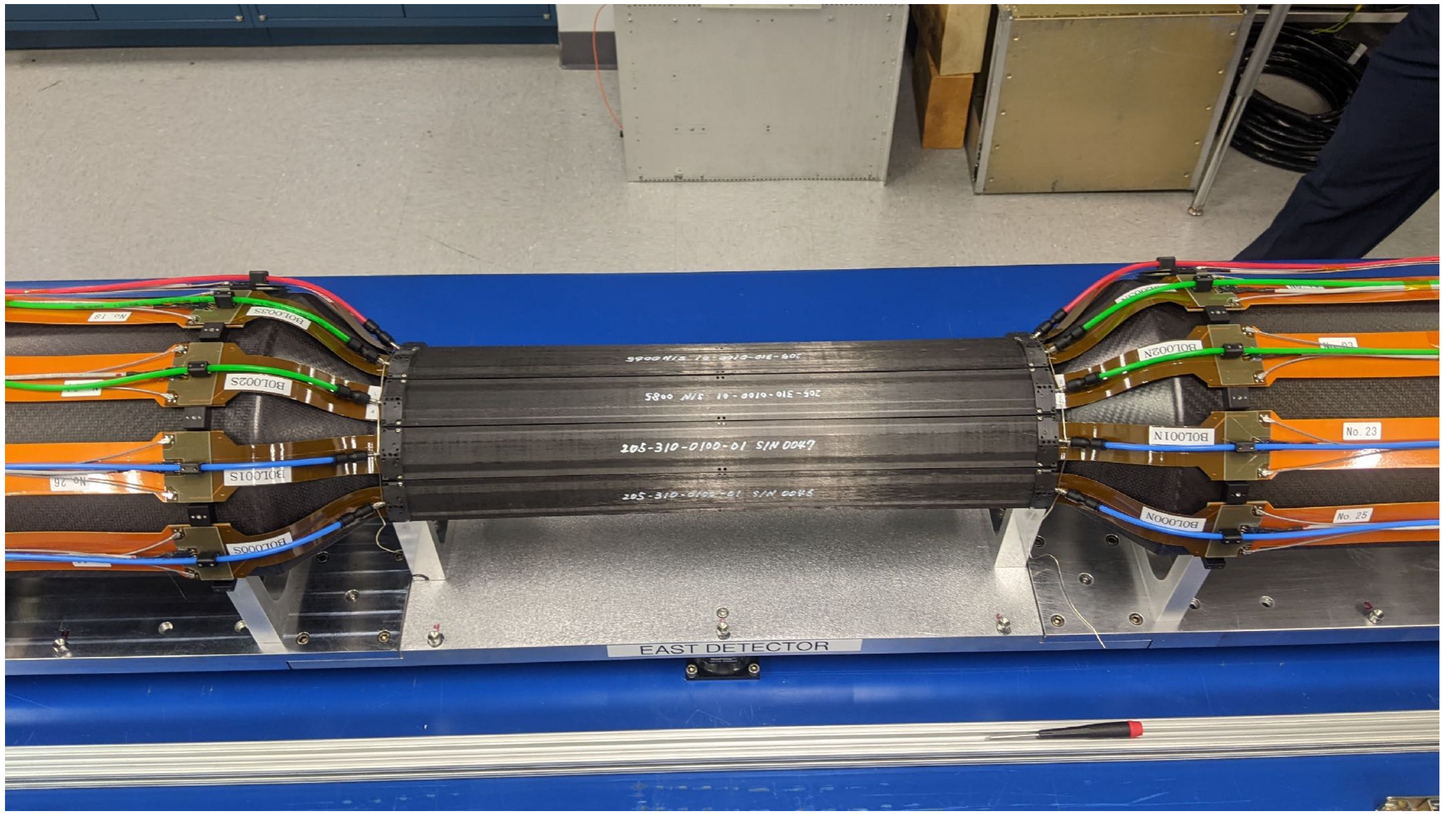


Bus extender installation

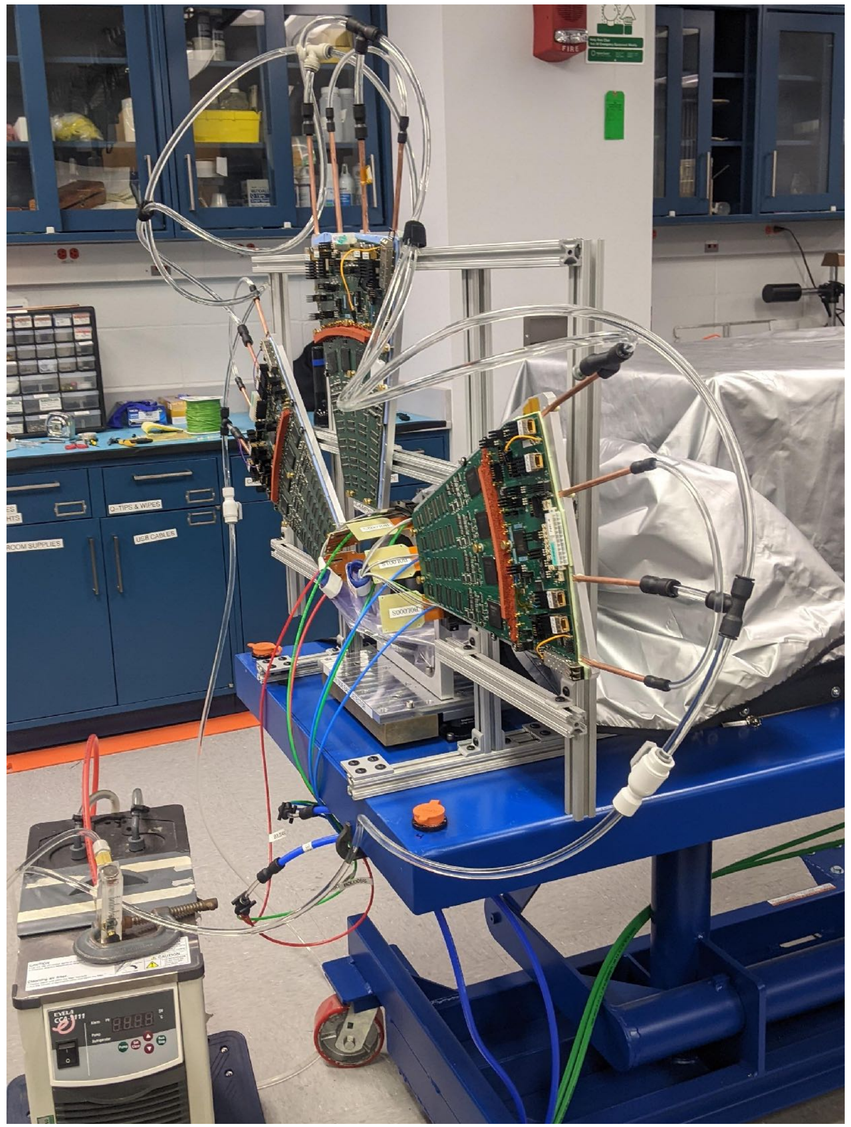


All ladders to the inner
layer of the inner half barrel

Construction of the INTT barrel



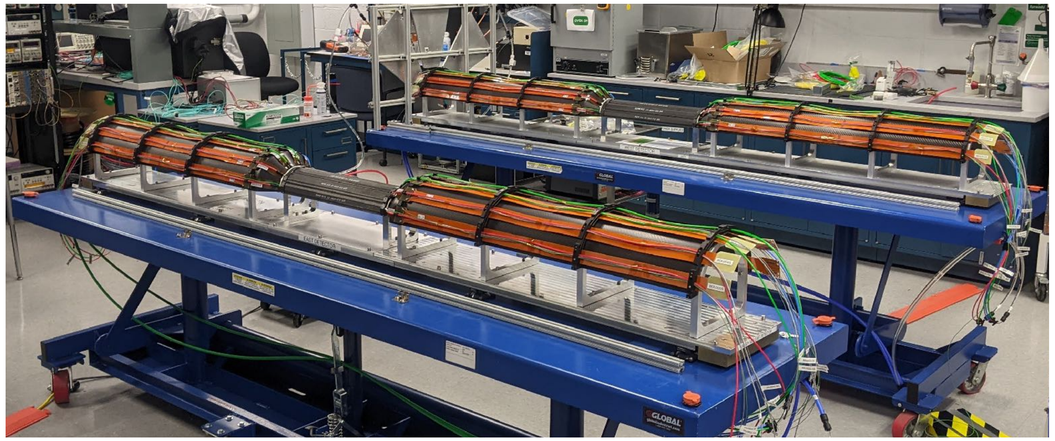
View of the central part after installing the ladders
for the inner layer of the inner half barrel



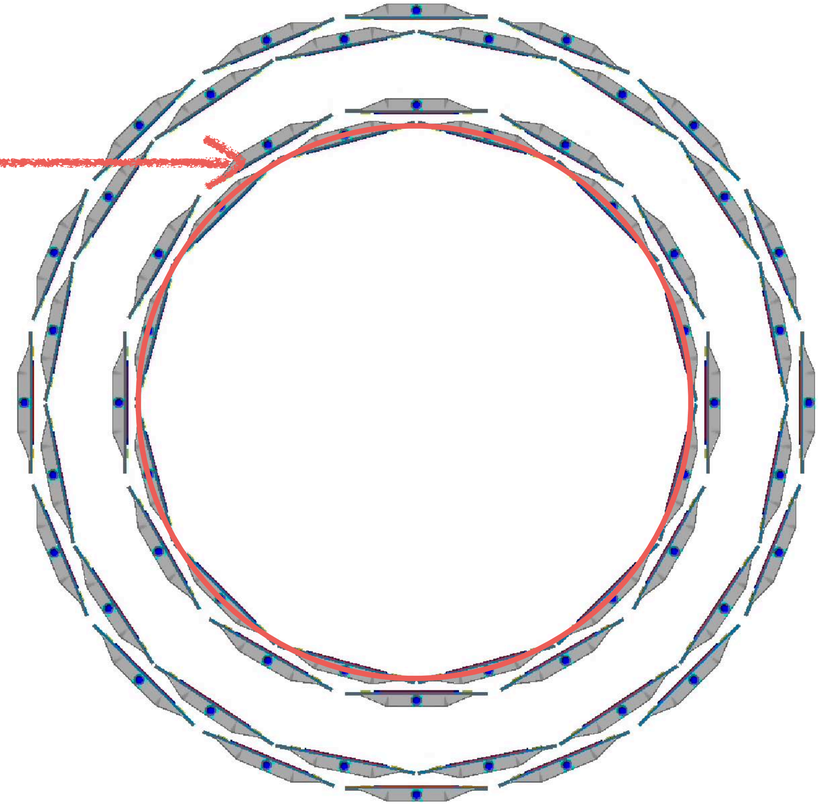
Temporal setup of ROCs for ladder tests

The barrel ladder tests

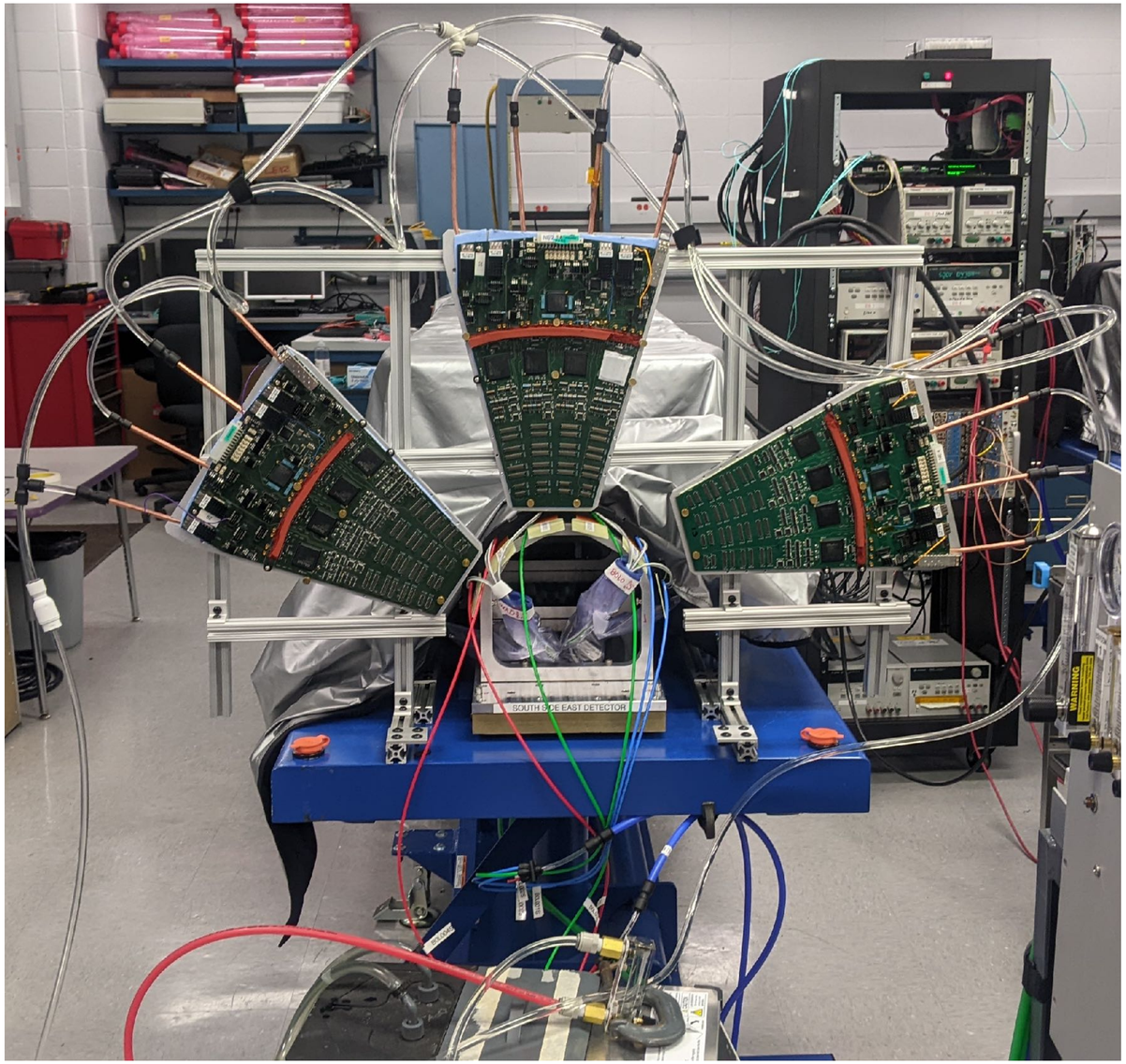
After each construction of the layer,
the installed ladders were tested



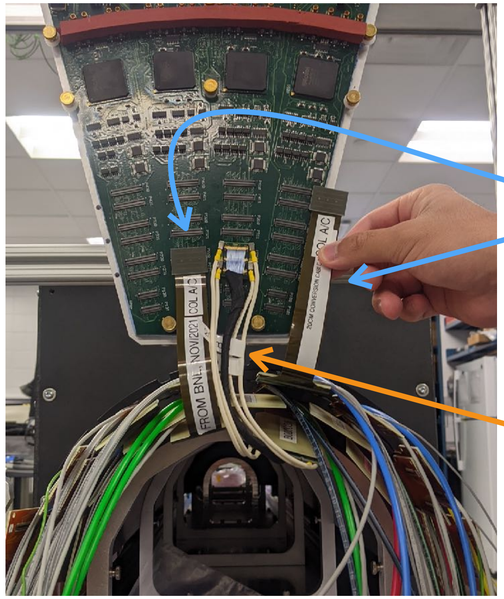
	Date	Tested layers
1st test	June/10-June/14	The inner layer of the inner barrel
2nd test		
3rd test		
4th test		



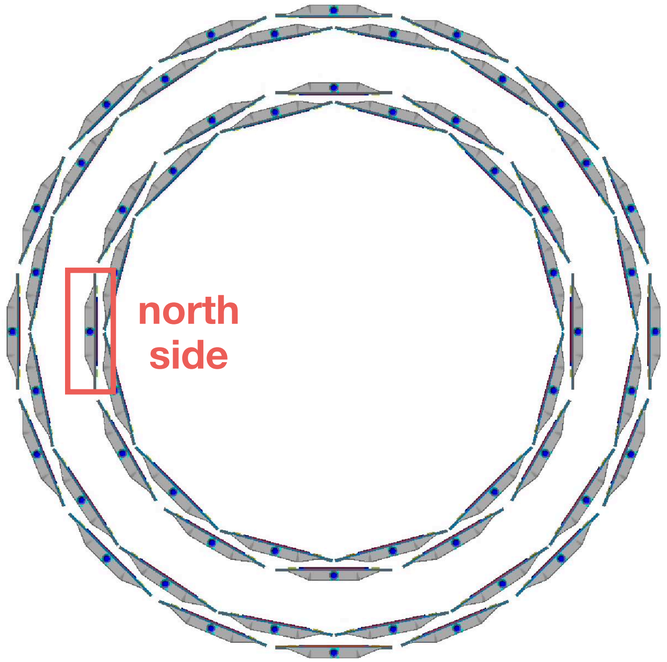
The barrel ladder tests: The setup



- ROCs
- The FEM/FEM-IB system
- High/Low voltage systems:
  - The same as the test bench (1st and 2nd tests)
  - **The same as ones will be used in sPHENIX (3rd and 4th tests)**
- The new temperature monitor system
- The ladder cooling and the ROC cooling
- **The μ-coaxial conversion cable**
- A single ladder was operated to test it.

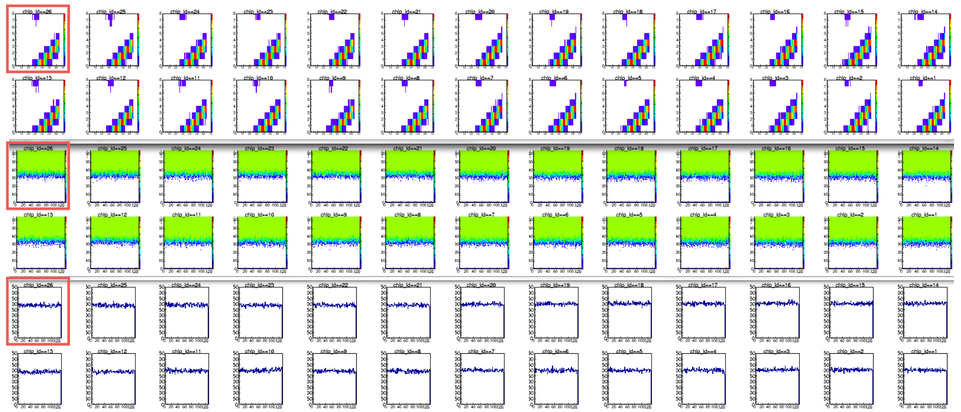


Results



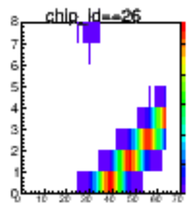
B0L109N

Test bench

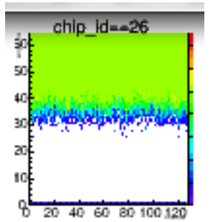


Data: 20220506_1747

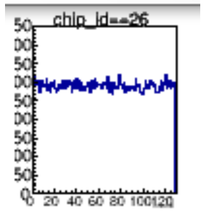
Chip26



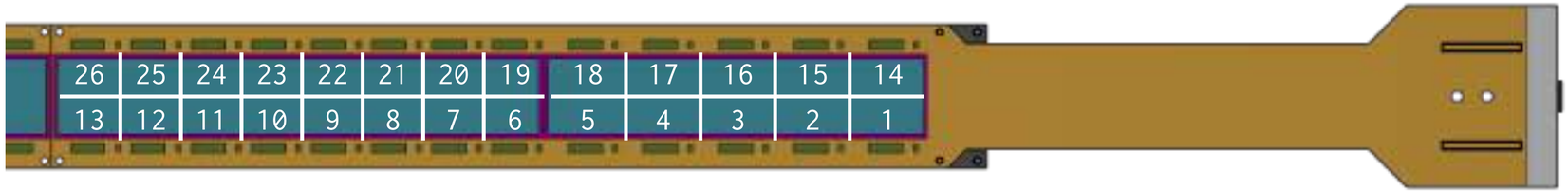
Pulse hight
vs
ADC



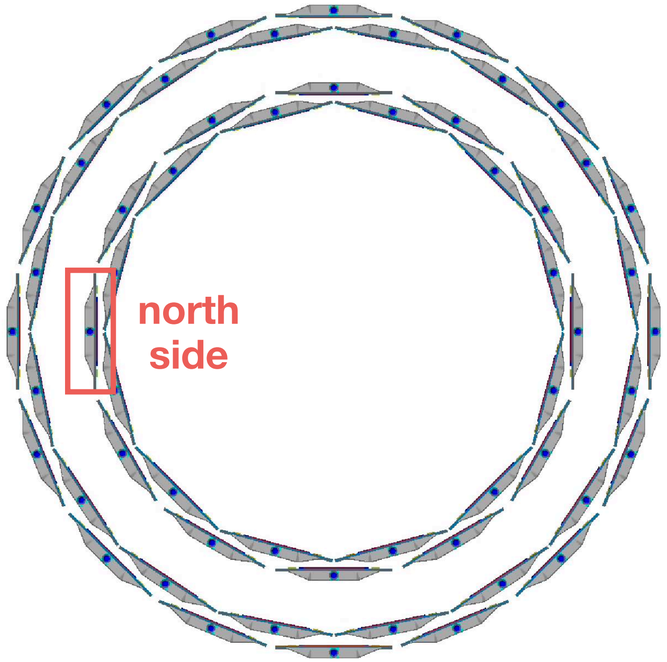
Channel
vs
Pulse hight



Channel

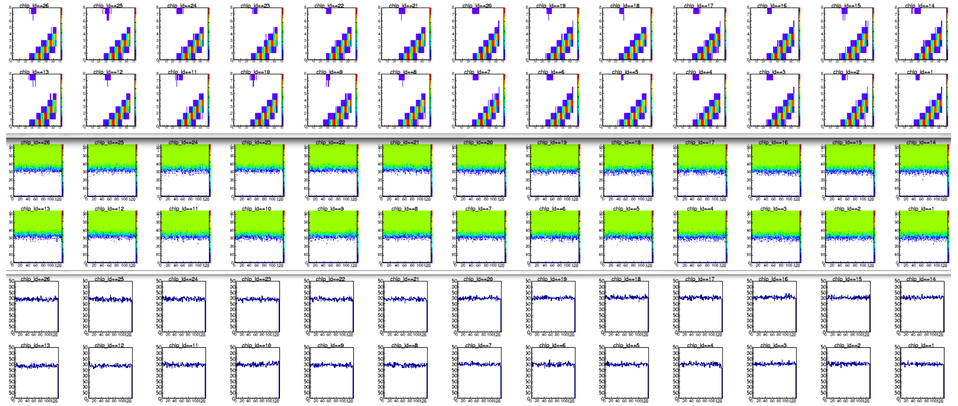


Results



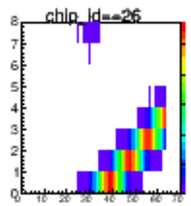
B0L109N

Test bench

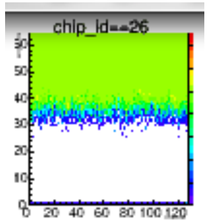


Data: 20220506_1747

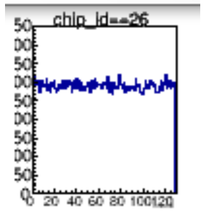
Chip26



Pulse hight
vs
ADC

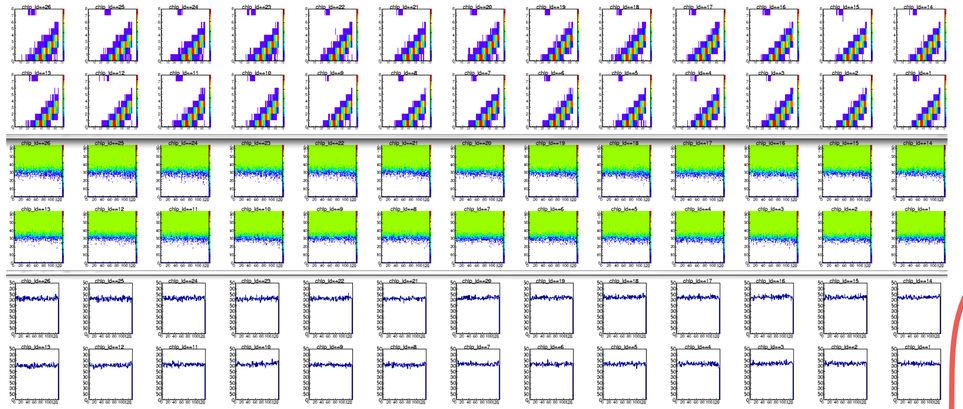


Channel
vs
Pulse hight



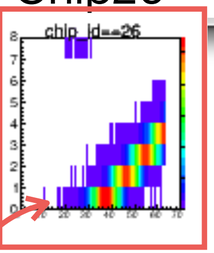
Channel

Barrel the 2nd test

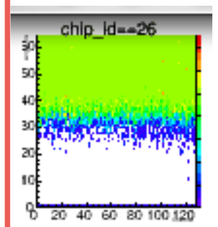


Data: 20220621_1316

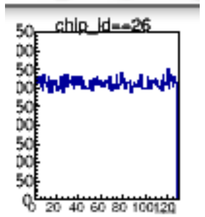
Chip26



Pulse hight
vs
ADC



Channel
vs
Pulse hight

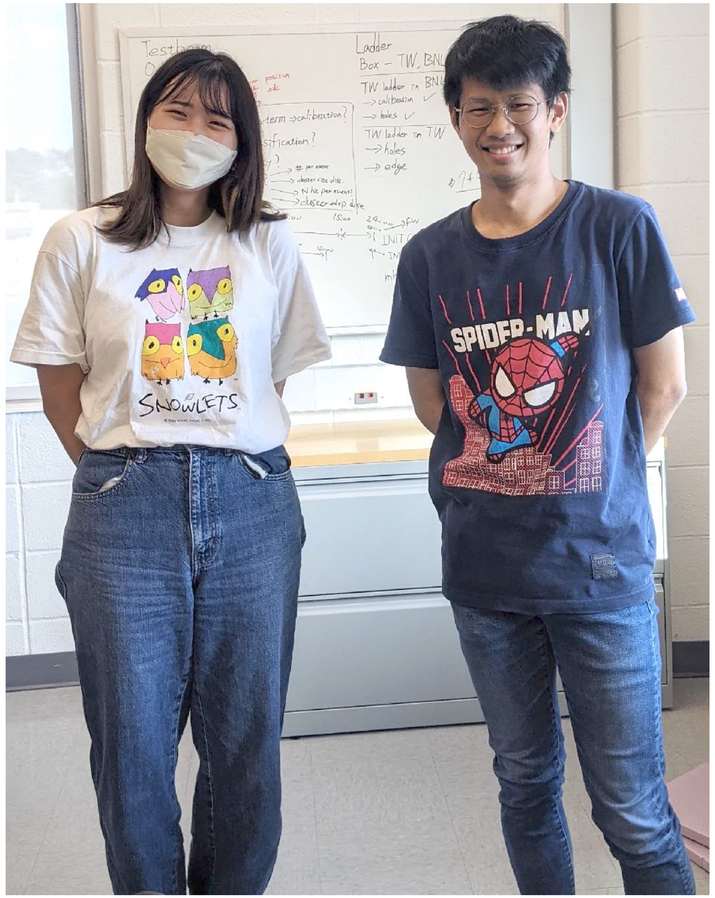


Channel

The broad distribution means noisier condition than that in the test bench.

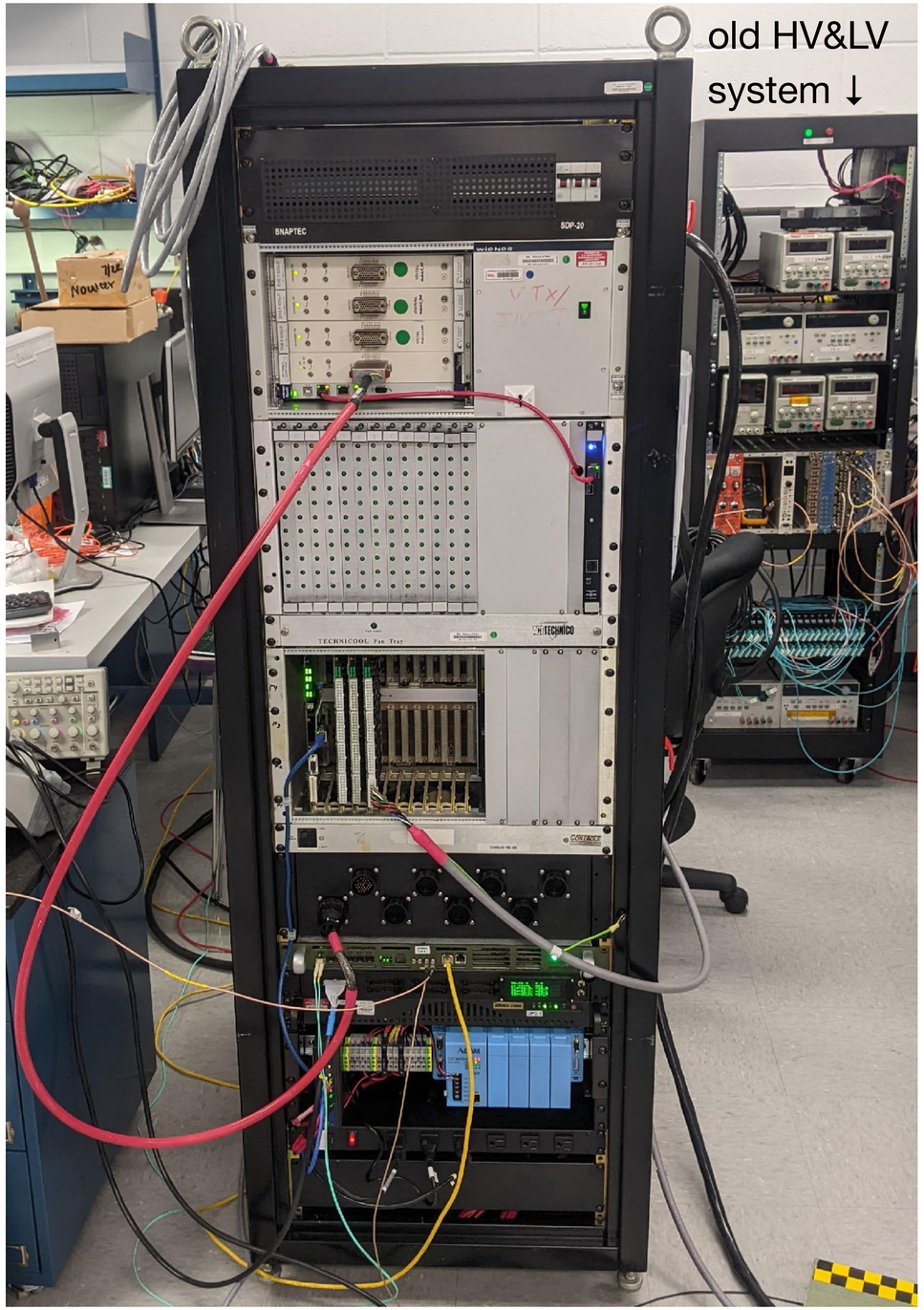
Upgrades on HV&LV

HV & LV power supplies were upgraded to the same one used in IR, so the environment has much less noise.



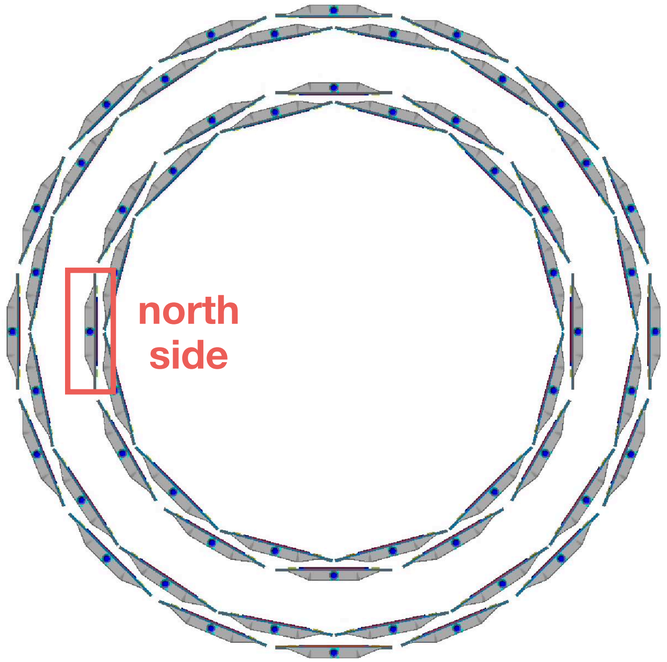
Maki Wakata
(Rikkyo Univ.)

Wei-Che Tang
(NCU)



The new HV&LV system

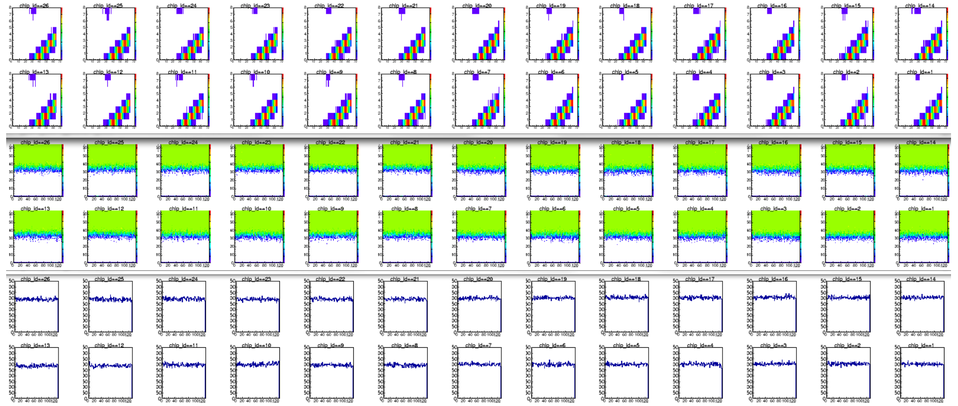
Results



The noise in the 2nd test is not in the 3rd test. It's as good as the one on the test bench.

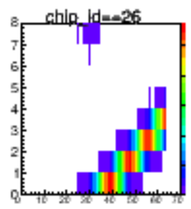
B0L109N

Test bench

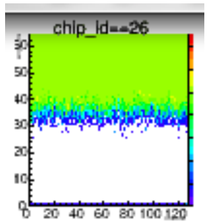


Data: 20220506_1747

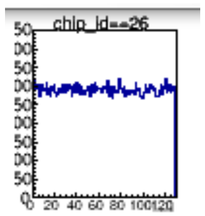
Chip26



Pulse hight vs ADC

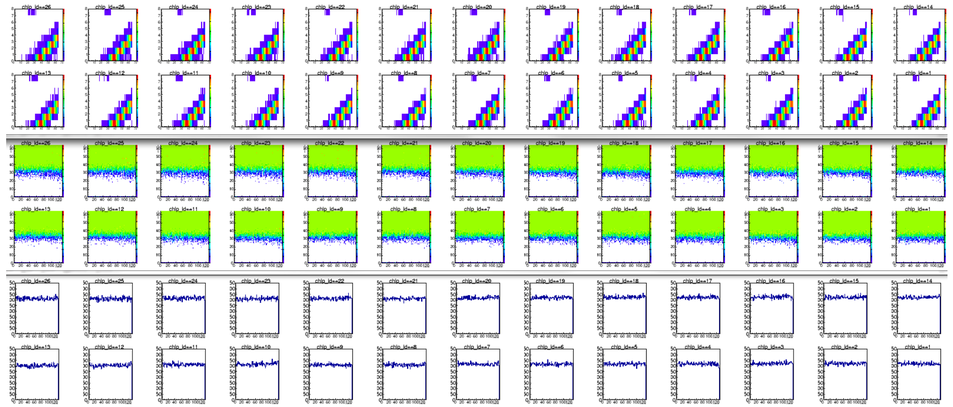


Channel vs Pulse hight



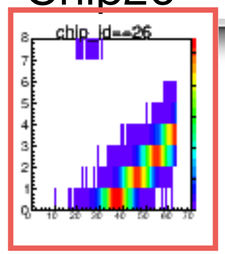
Channel

Barrel the 2nd test

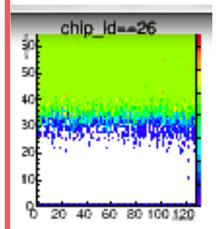


Data: 20220621_1316

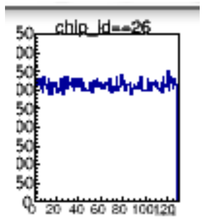
Chip26



Pulse hight vs ADC

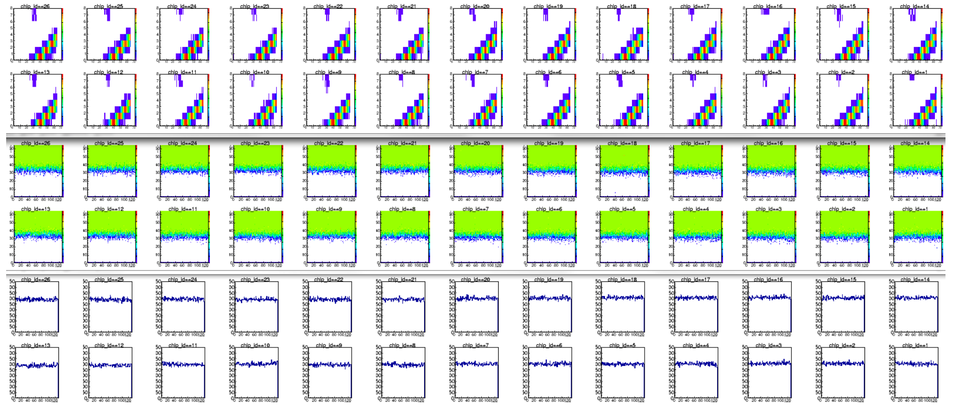


Channel vs Pulse hight



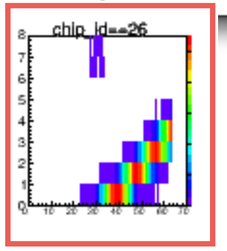
Channel

Barrel the 3rd test

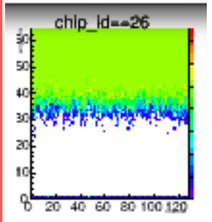


Data: 20220811_1137

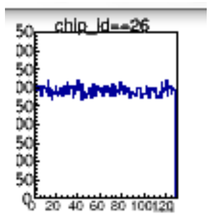
Chip26



Pulse hight vs ADC

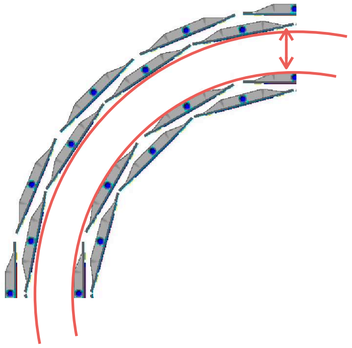


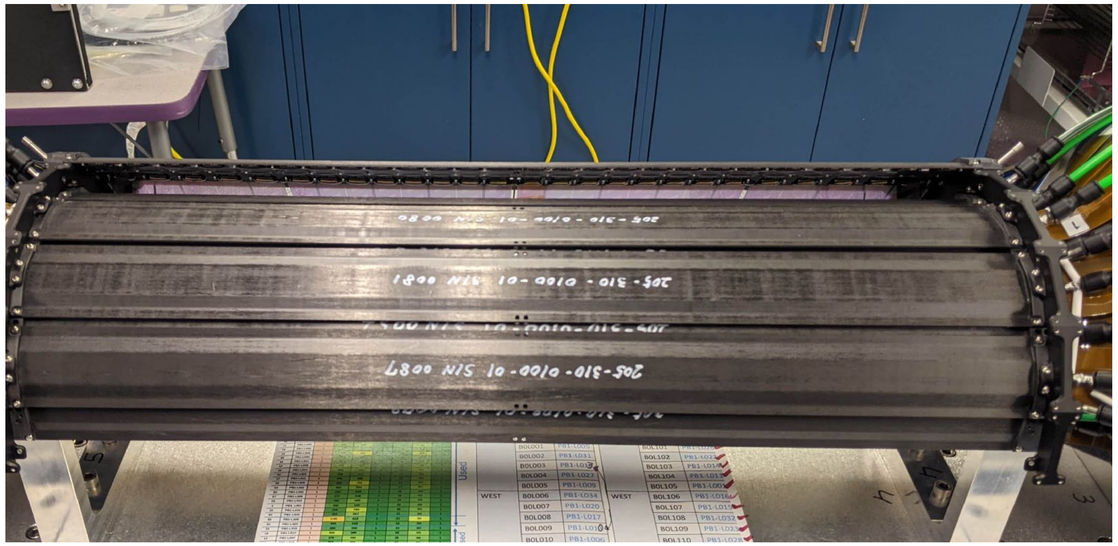
Channel vs Pulse hight



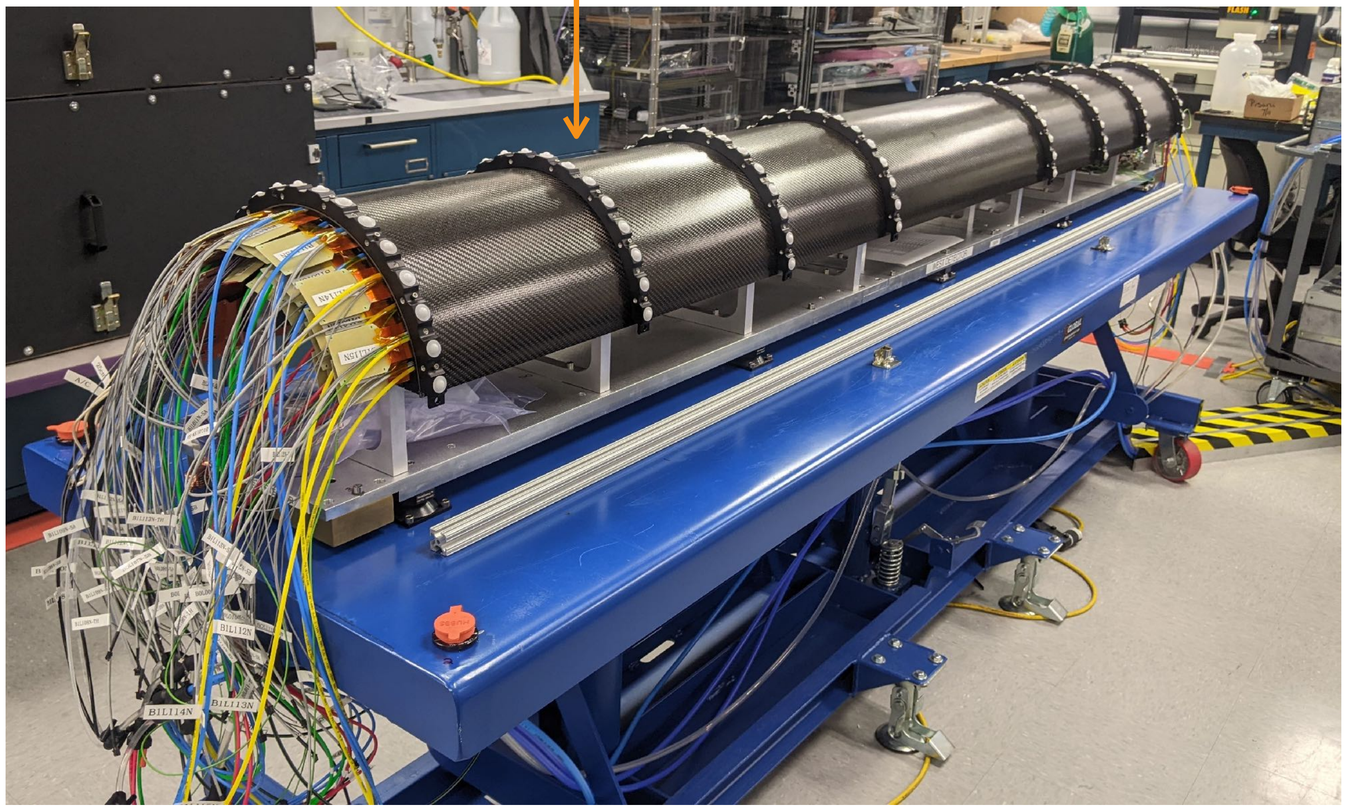
Channel

Construction of the INTT barrel



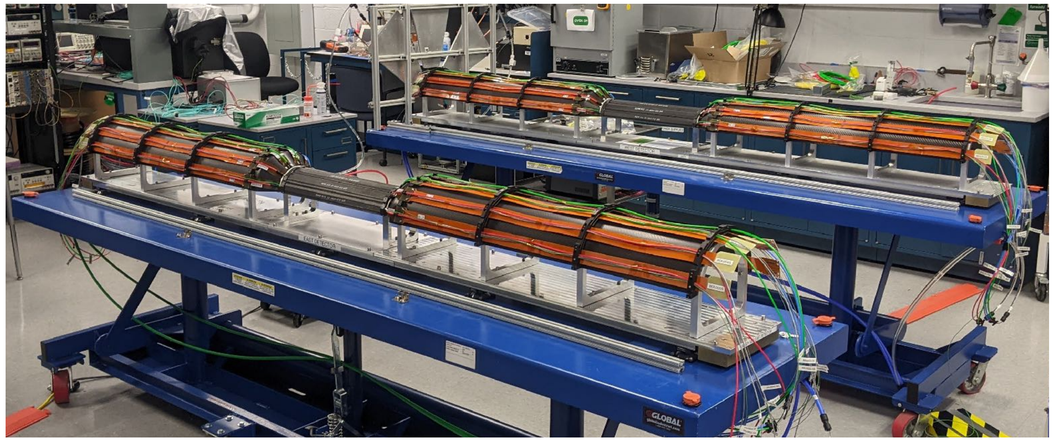


The outer surfaces made of CFRP

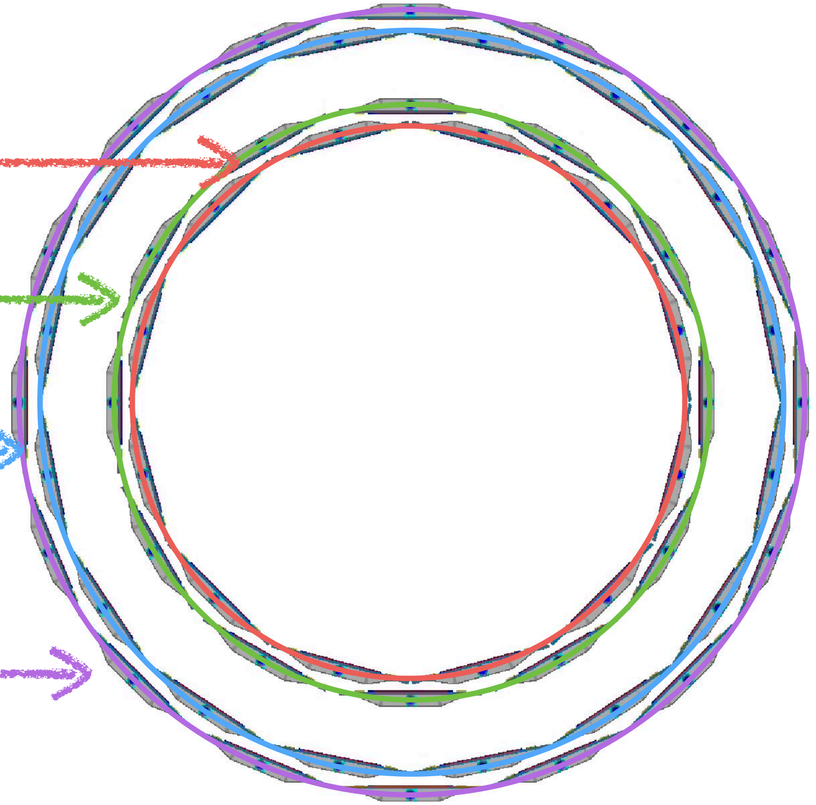


The barrel ladder tests

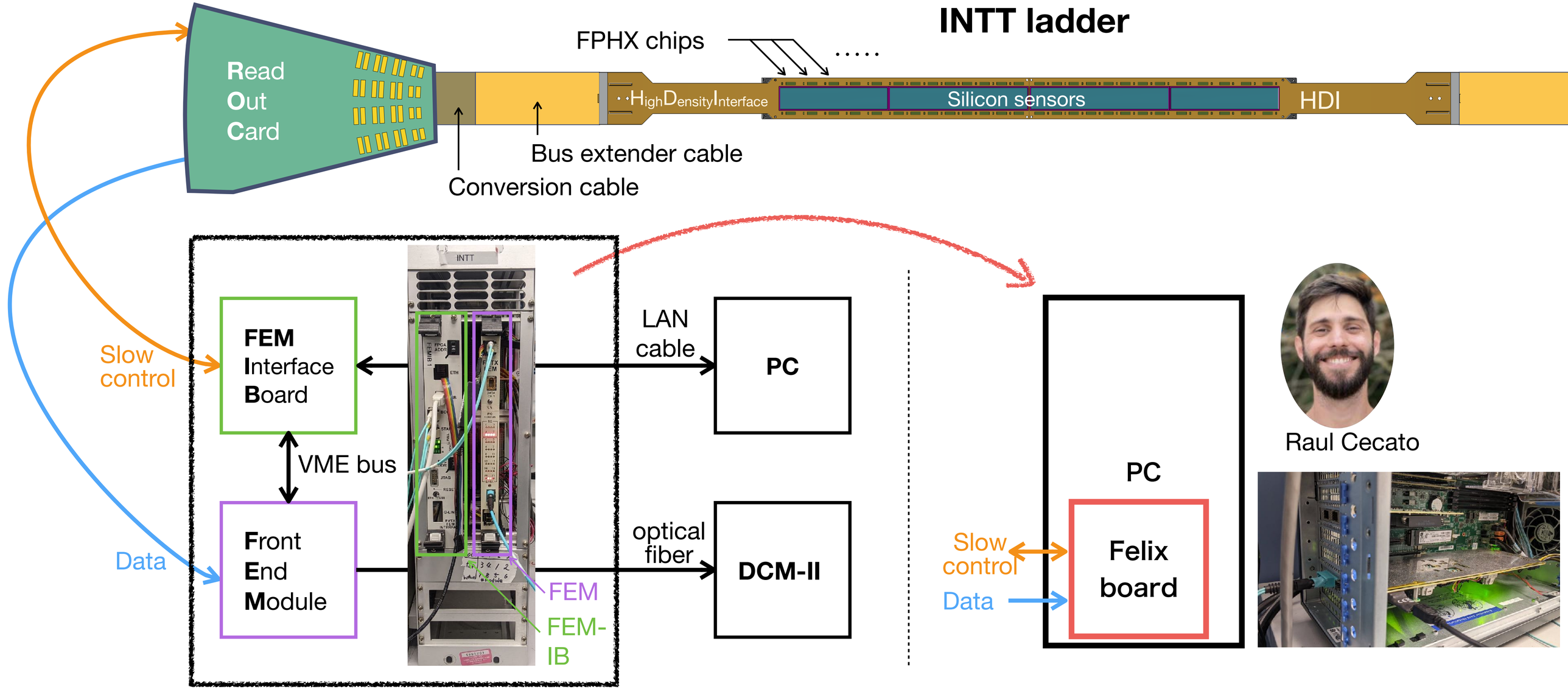
After each construction of the layer,
the installed ladders were tested



	Date	Tested layers
1st test	June/10-June/14	The inner layer of the inner barrel
2nd test	June/17-July/07	The outer layer of the inner barrel, The outer layer of the inner barrel (some)
3rd test	Aug/10-Aug/24	The inner layer of the outer barrel, The outer layer of the inner barrel (some), The outer layer of the inner barrel (some)
4th test	Aug/26 -Sep/16	The outer layer of the outer barrel

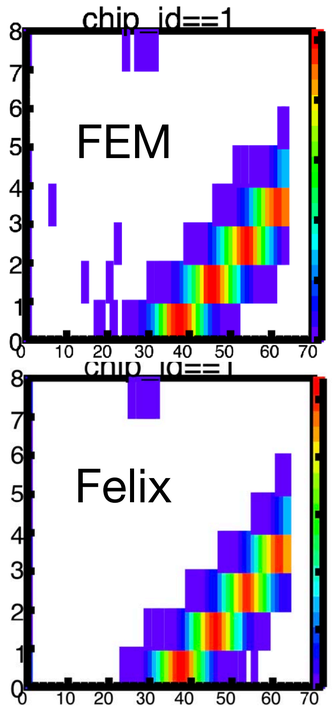


The barrel ladder tests using the FELIX system

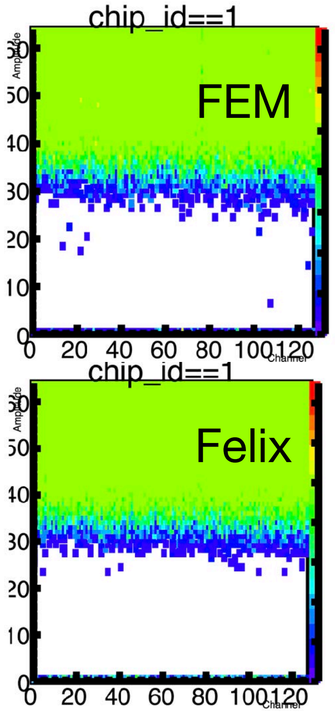


Results: Comparison, focusing on Chip1

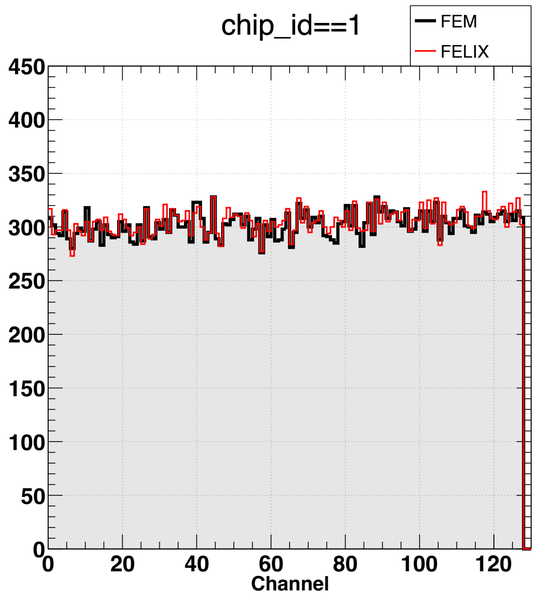
-FEM
-FELIX



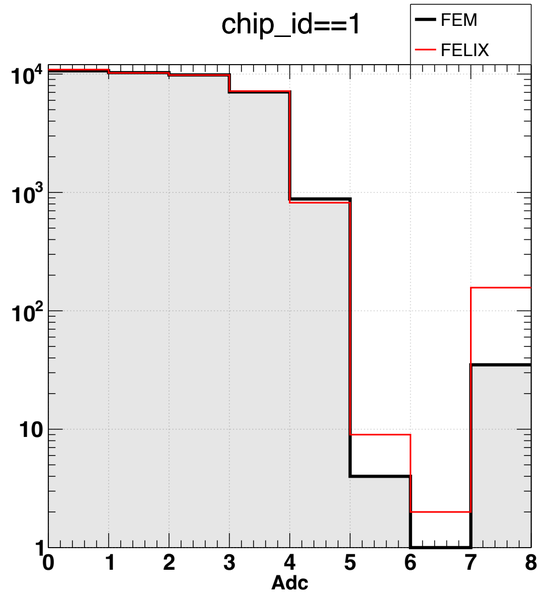
Amplitude vs ADC



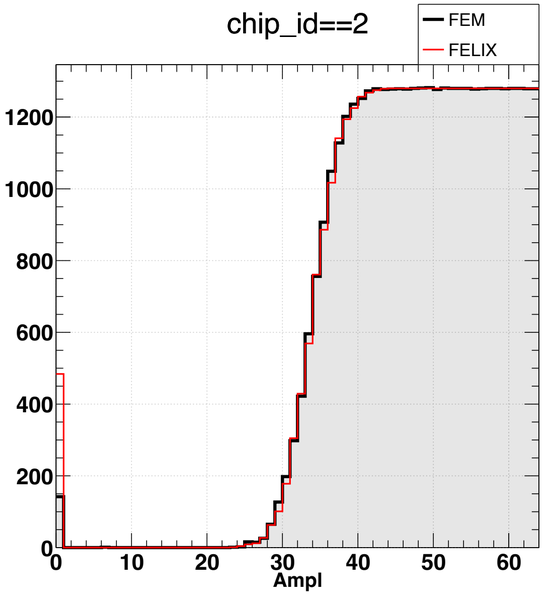
Channel vs Amplitude



Channel dist.



ADC dist.

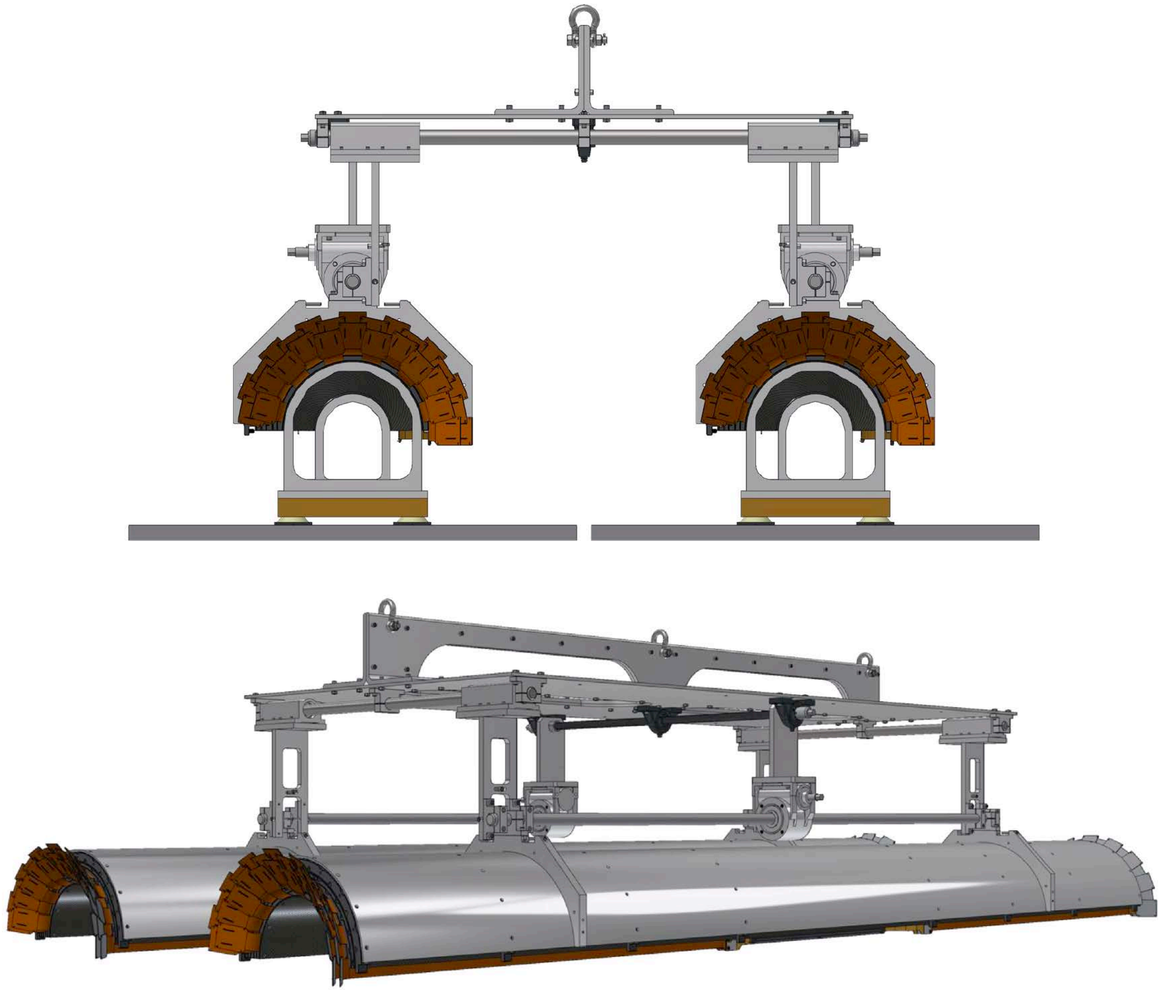


Amplitude dist.

The results from the FELIX system are consistent with FEM's.

Making the half barrels in the barrel

The installation fixture



The installation fixture is now ready.
Test of making the full barrel will be done this or next week.