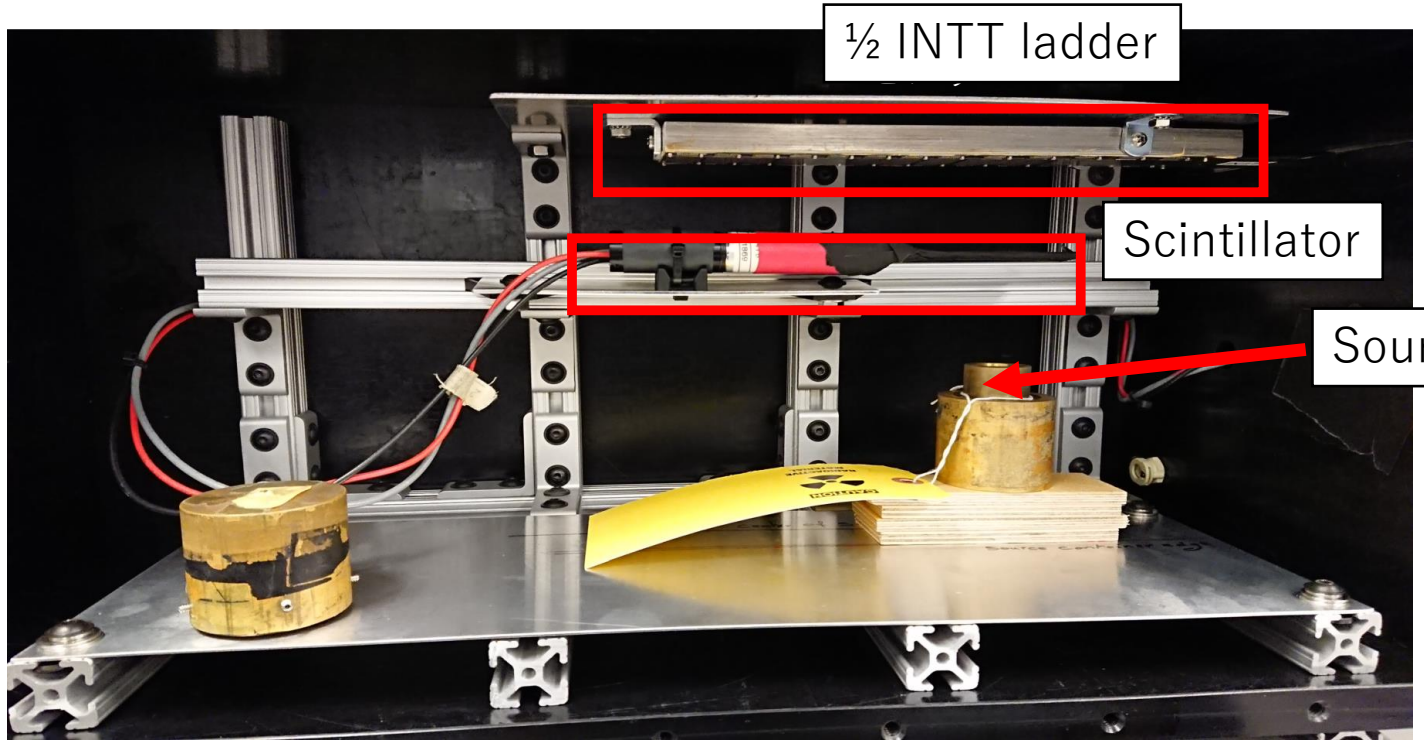
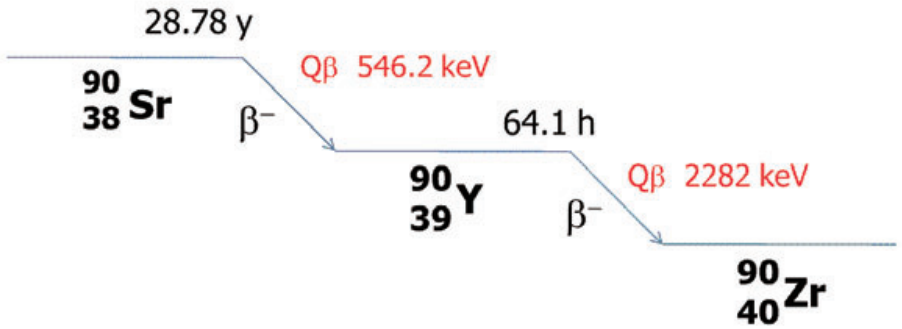
INTT Ladder Source Test Fixture Design

Source Test Setup in 2017@BNL

H. Masuda Master Thesis
Section 4.2.3.





ADC Setup

ADC	設定値	対応電圧	Note
ADC0	25	310mV	
ADC1	35	350mV	
ADC2	48	400mV	2strip shared peak(MIP)
ADC3	98	600mV	
ADC4	148	800mV	
ADC5	172	900mV	1strip peak(MIP)
ADC6	223	1100mV	
ADC7	248	1200mV	

Note: since the thickness of the scintillator @ NCU is 12.5mm, the layout suppose to be source-ladder-scintillator.

Source Test Setup at NWU in 2018

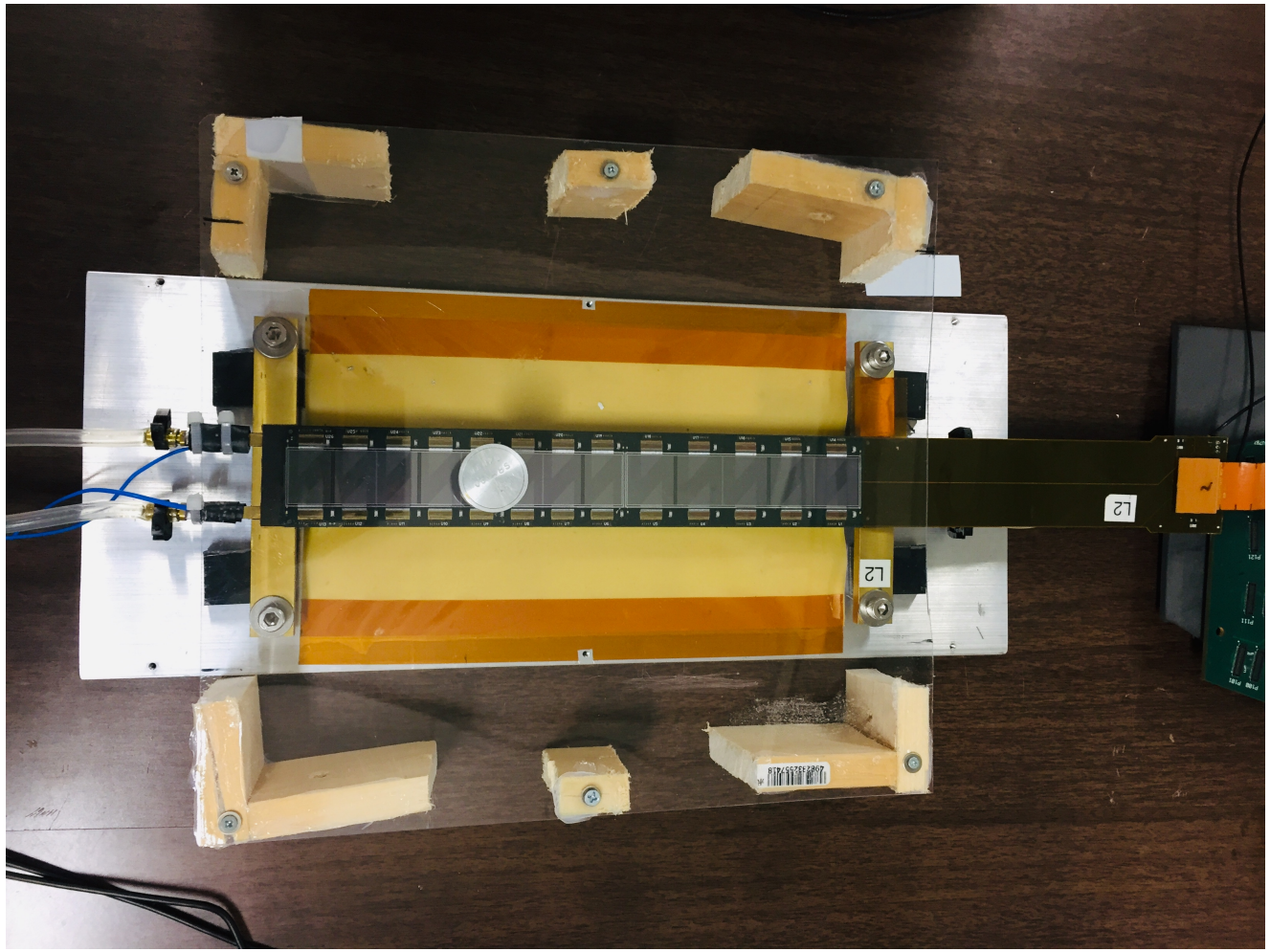
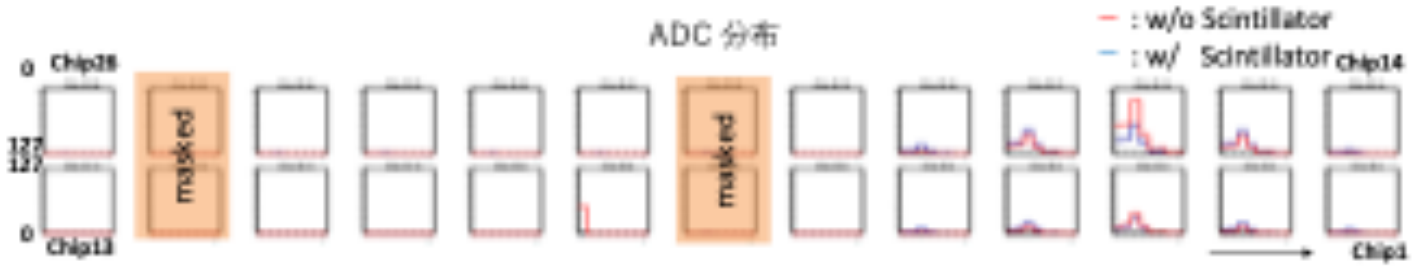


図 5.3　β 線測定時のシリコンセンサーのセットアップ

Measurements with self-trigger mode

Hit distribution without scintillator

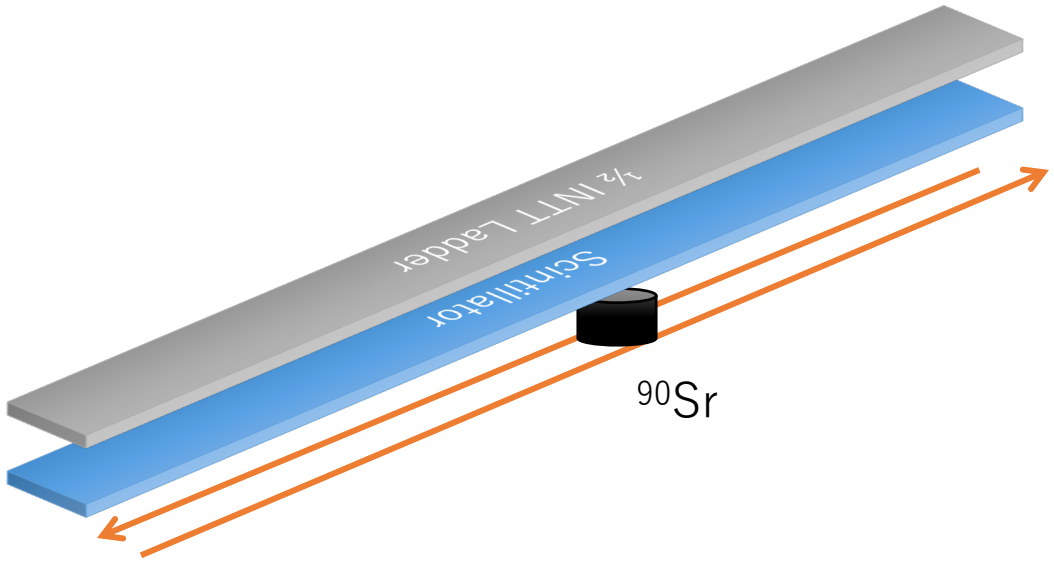
Hit distribution with scintillator as a quenching material.



This figure indicates we still expect finite ADC ~400mV or so.

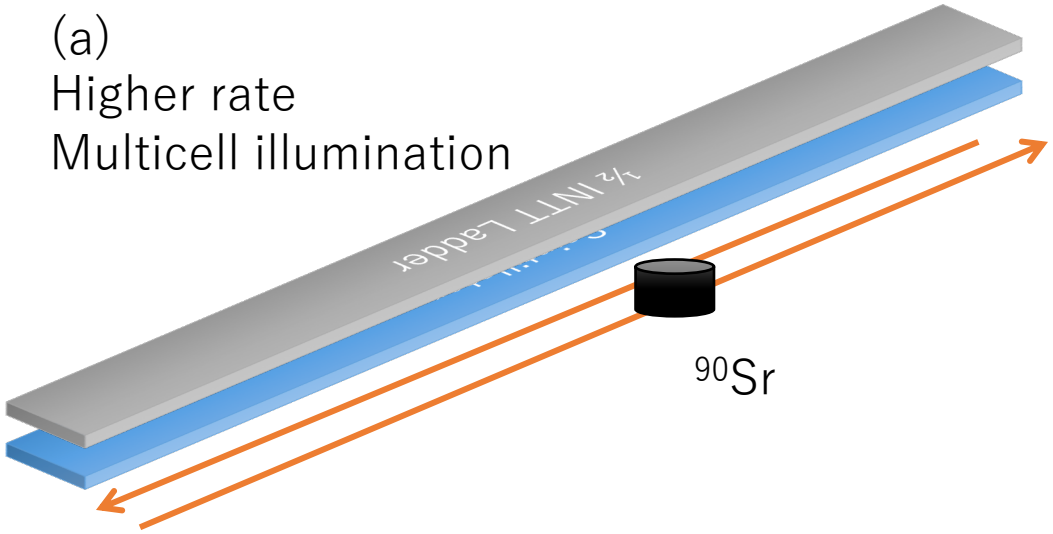
What is needed?

- Frame and support structure in a dark box for the setup.
- Somewhat (semi)-automated source position control to scan through each INTT cell. The record of the source position is to be integrated with data.
- These system can be also be applied to BNL as well.

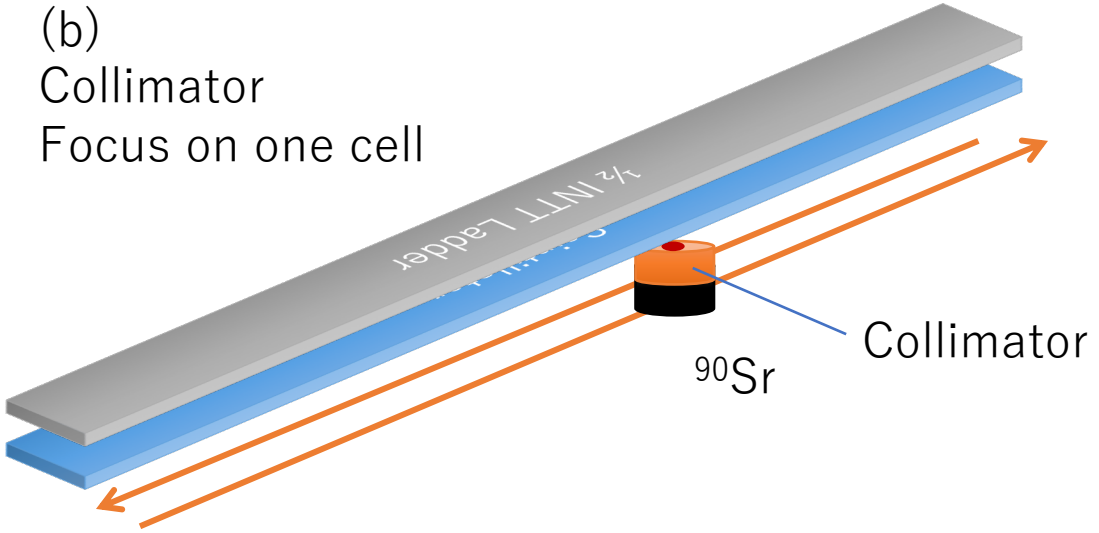


Options

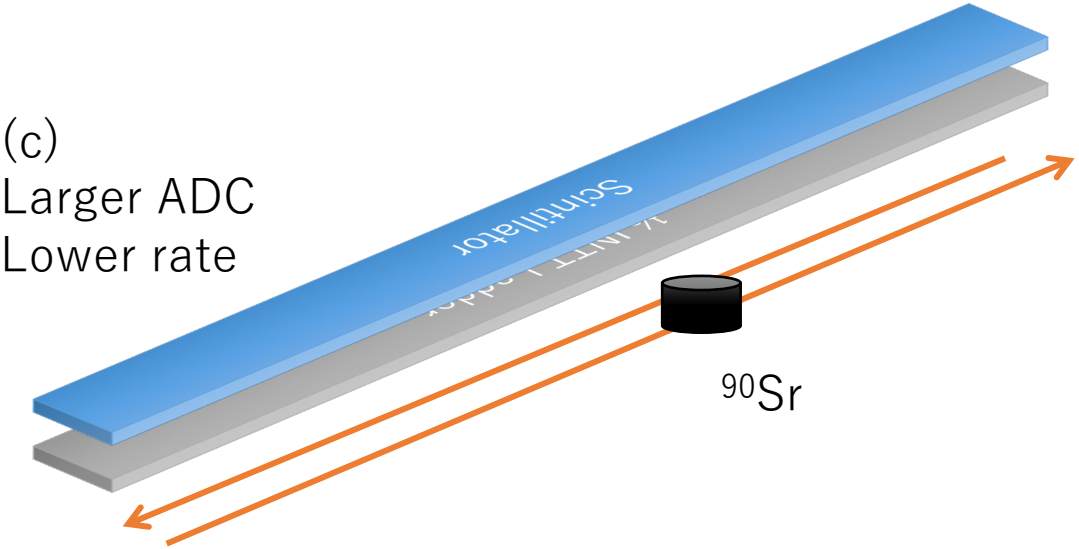
(a)
Higher rate
Multicell illumination



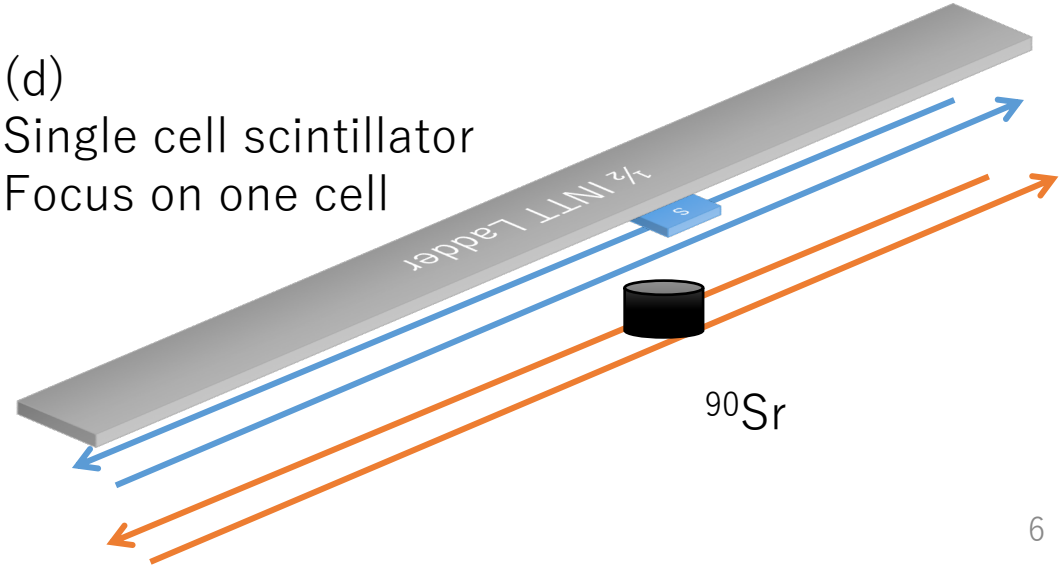
(b)
Collimator
Focus on one cell



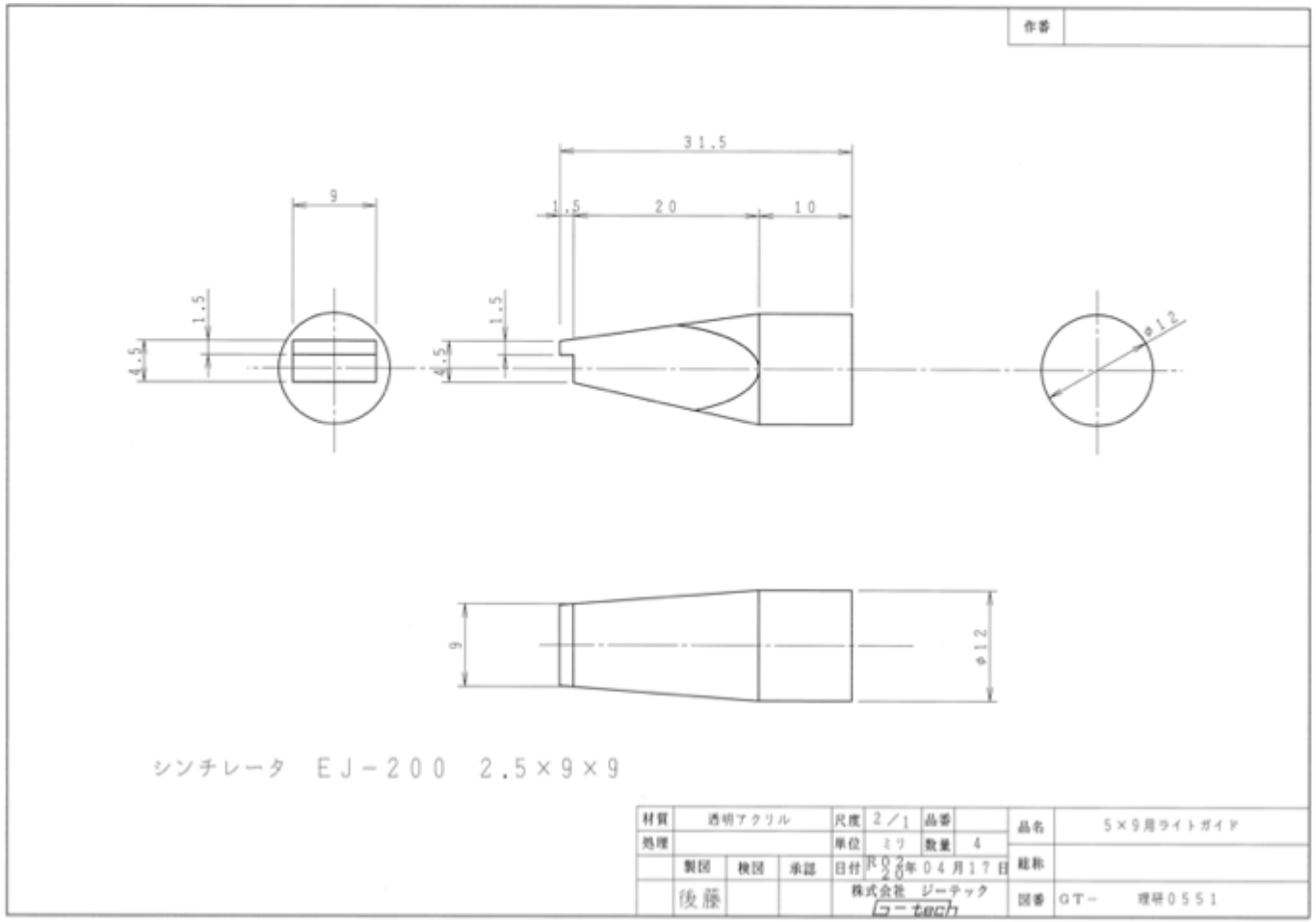
(c)
Larger ADC
Lower rate



(d)
Single cell scintillator
Focus on one cell



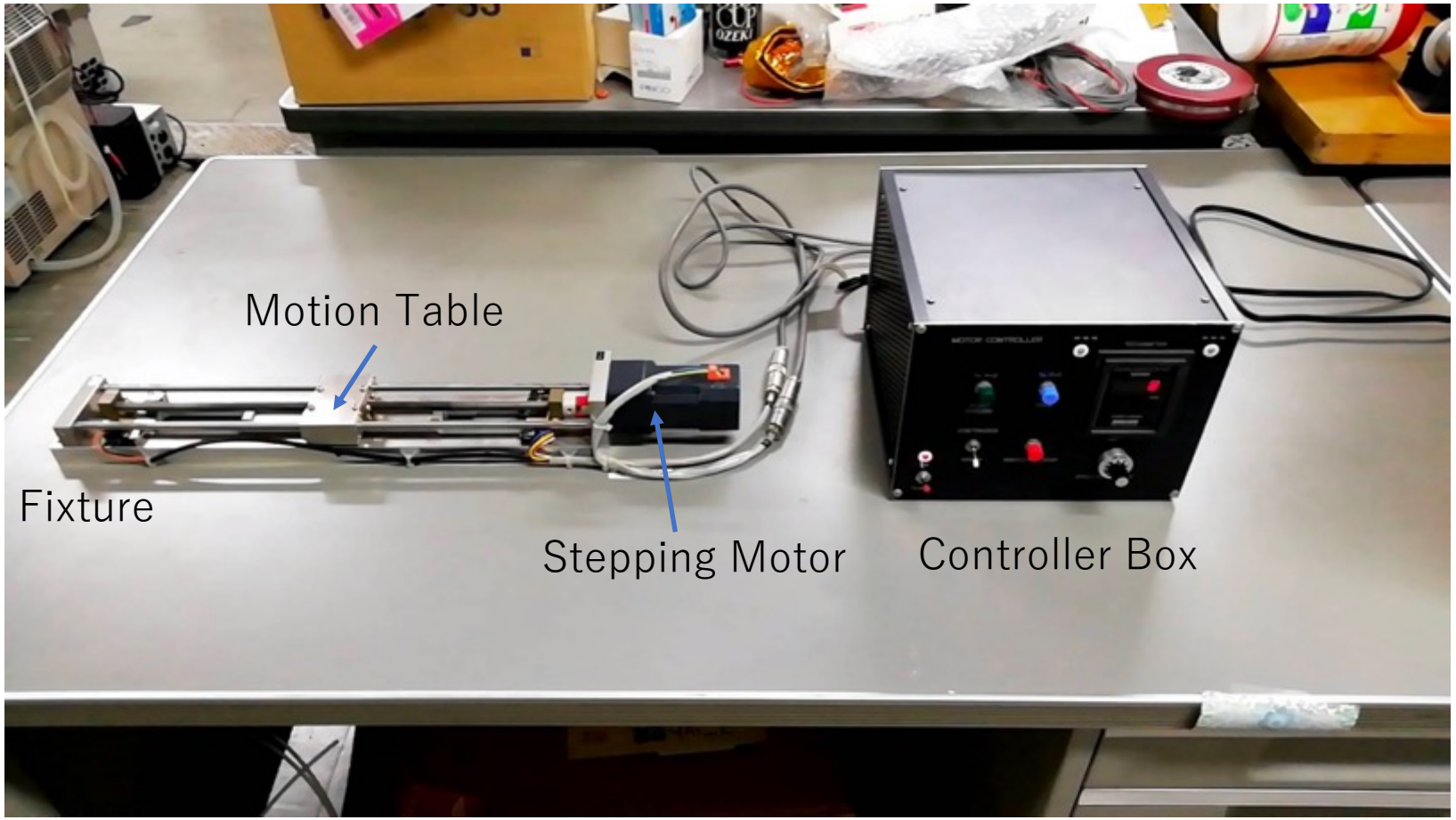
Trigger Scintillator



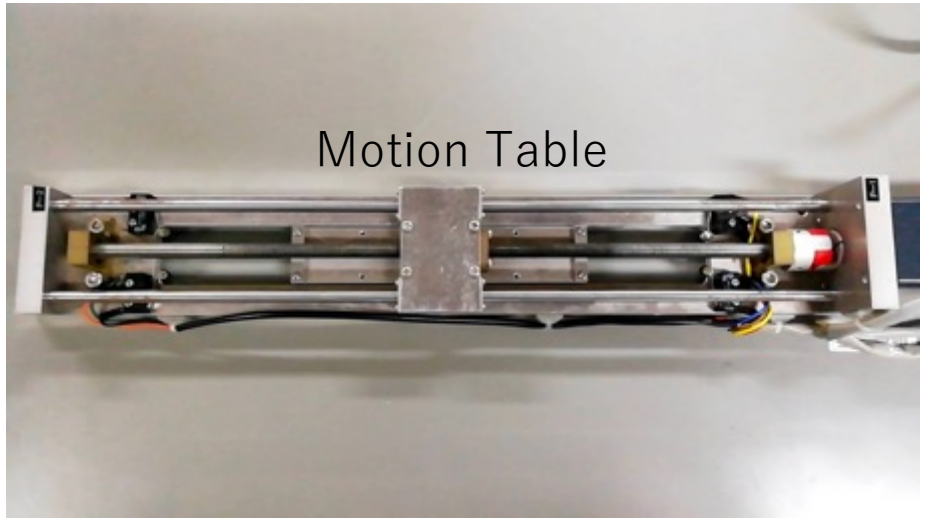
PMT: Hamamatsu 3165-10

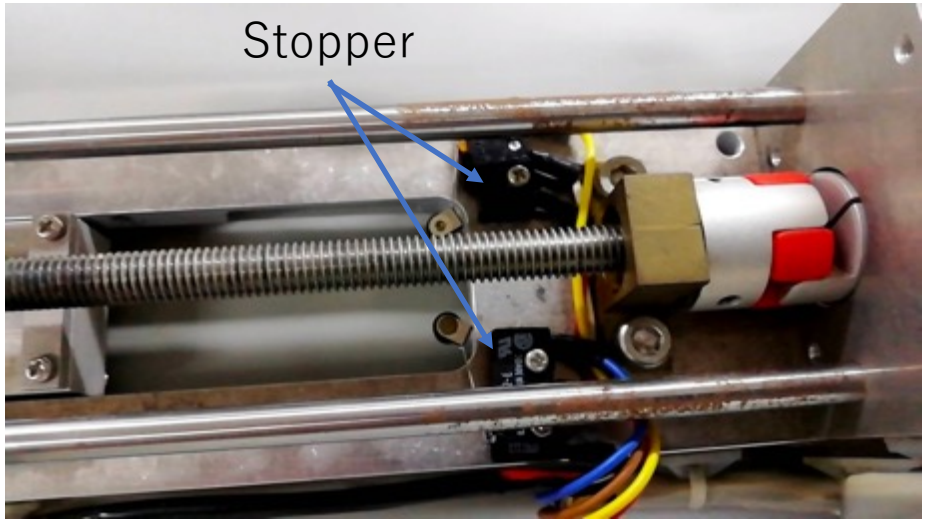
Light guide for 9mm x 9mm x 2.5mm thick

Fixture Built for PHENIX PIXEL Detector

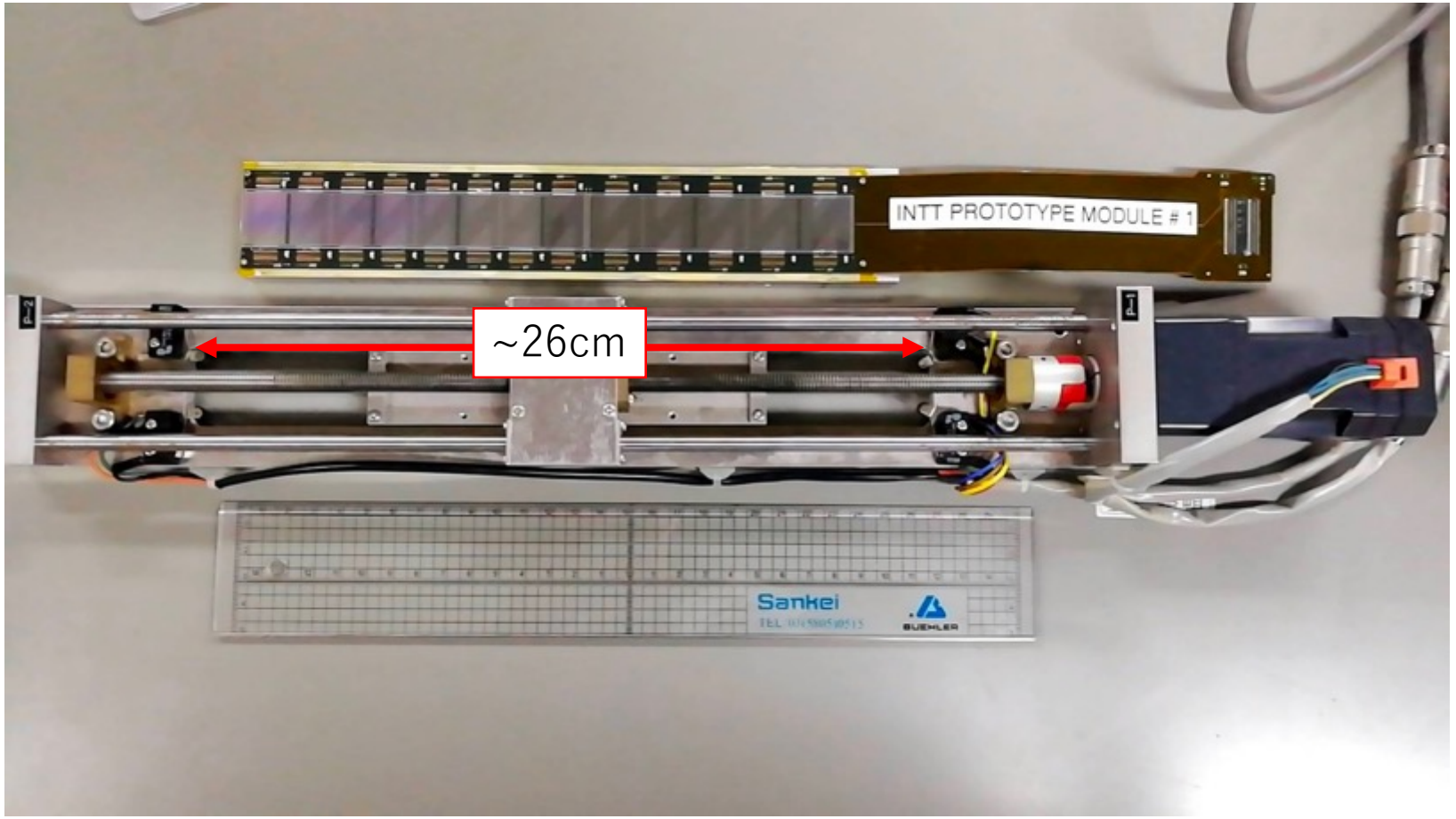


Fixture Built for PHENIX PIXEL Detector





Dynamic Range



Controller Box

Feature

- Power Control
- Speed control and speed meter (4 digits)
- Forward/Backward Motion
- Emergency stop (manual)
- Safety stop in both ends (automatic)
- Approximately 26cm dynamic range (1/2 ladder)
- Motion in x-direction

Missing Feature:

- Position readback
- Programmable position
- Is the speed fast enough?
- Else?

背面の配線

使われていない

今後の計画

- PIXEL用の治具と線源測定用の薄い(2.5mm厚) シンチレータを奈良女に輸送。
- 奈良女に設置した後に、今後の線源測定を最適化。PIXEL用治具に足りない要素があれば、それをまとめてINTT用治具設計に役立てる。