

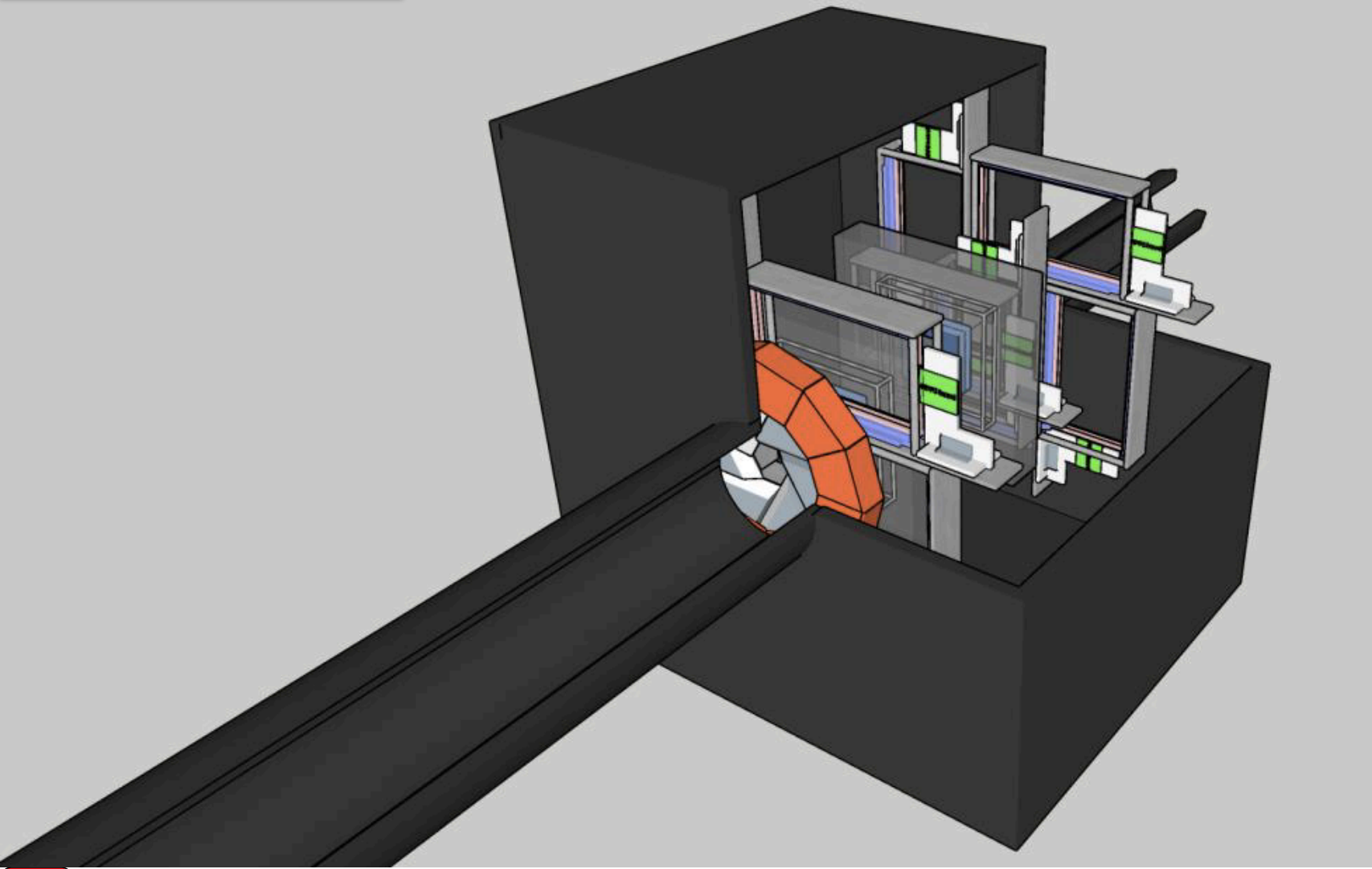
Status report of prototype BDC for LAMPS

Hyunchul Kim, Dong Ho Moon, Seonghak Lee, Jaein Hwang
(Chonnam National University)
Sanghoon Hwang
(KRISS)

New version of LAMPS design (이형준)

Vacuum chamber

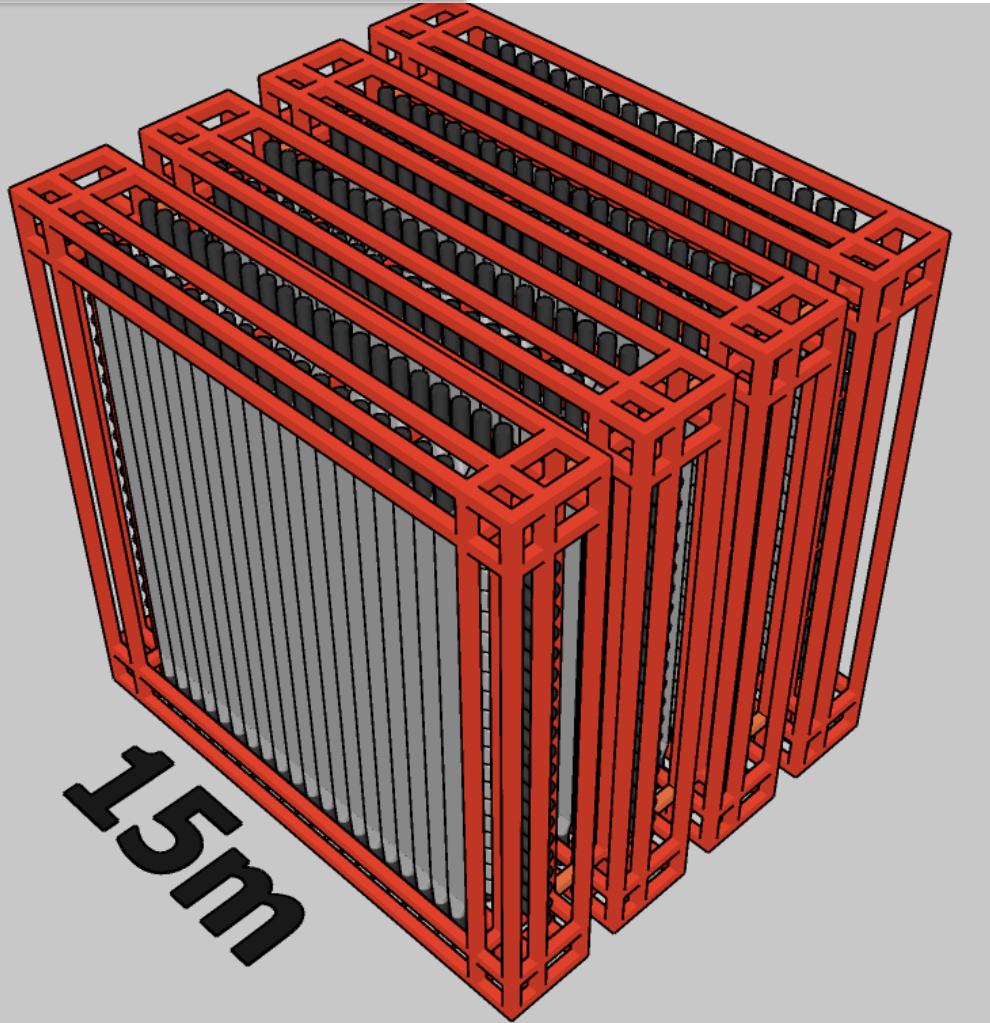
Cylindrical shape -> rectangular shape



New version of LAMPS design (이형준)

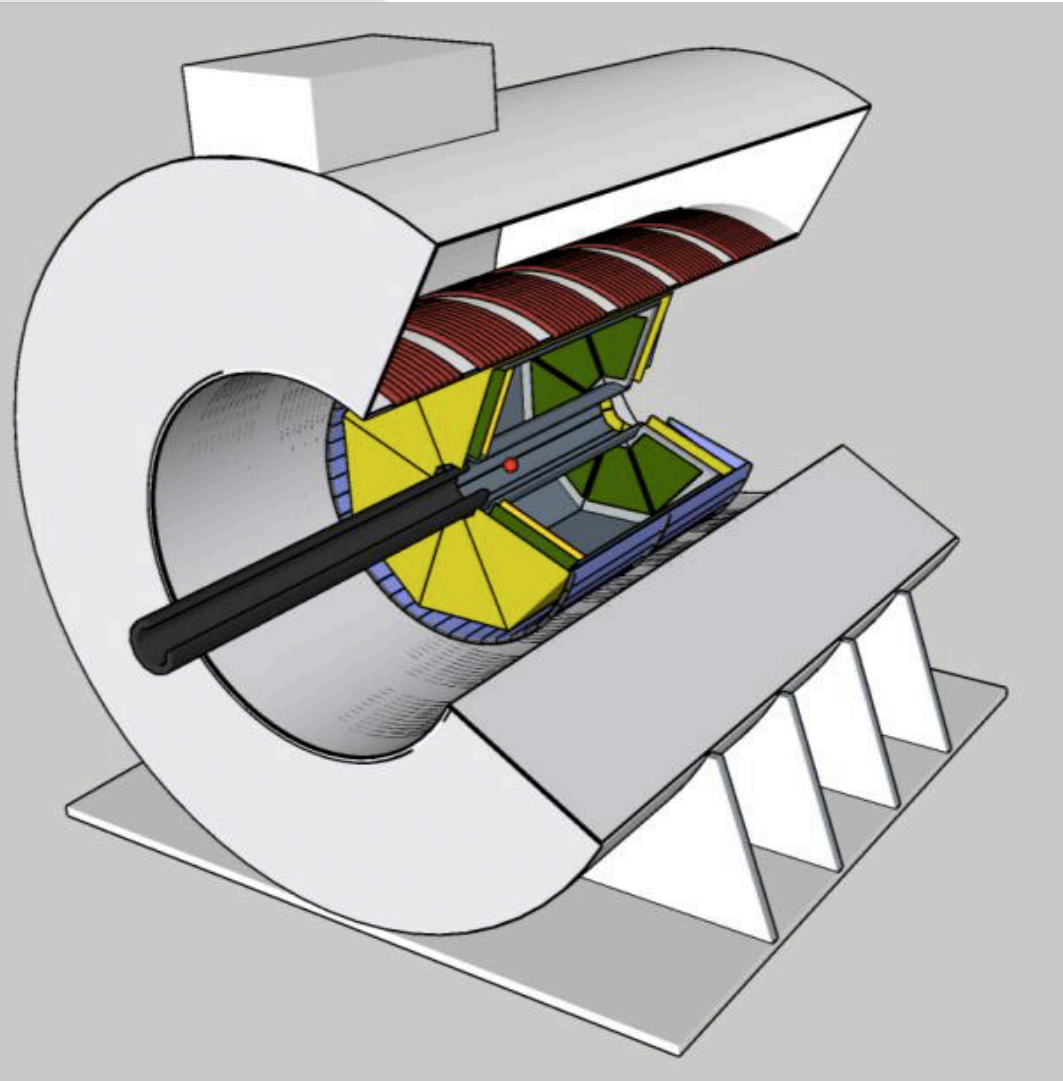
Neutron detector

Final design applied, (VETO-netron-VETO-netron..)



New version of LAMPS design (이형준)

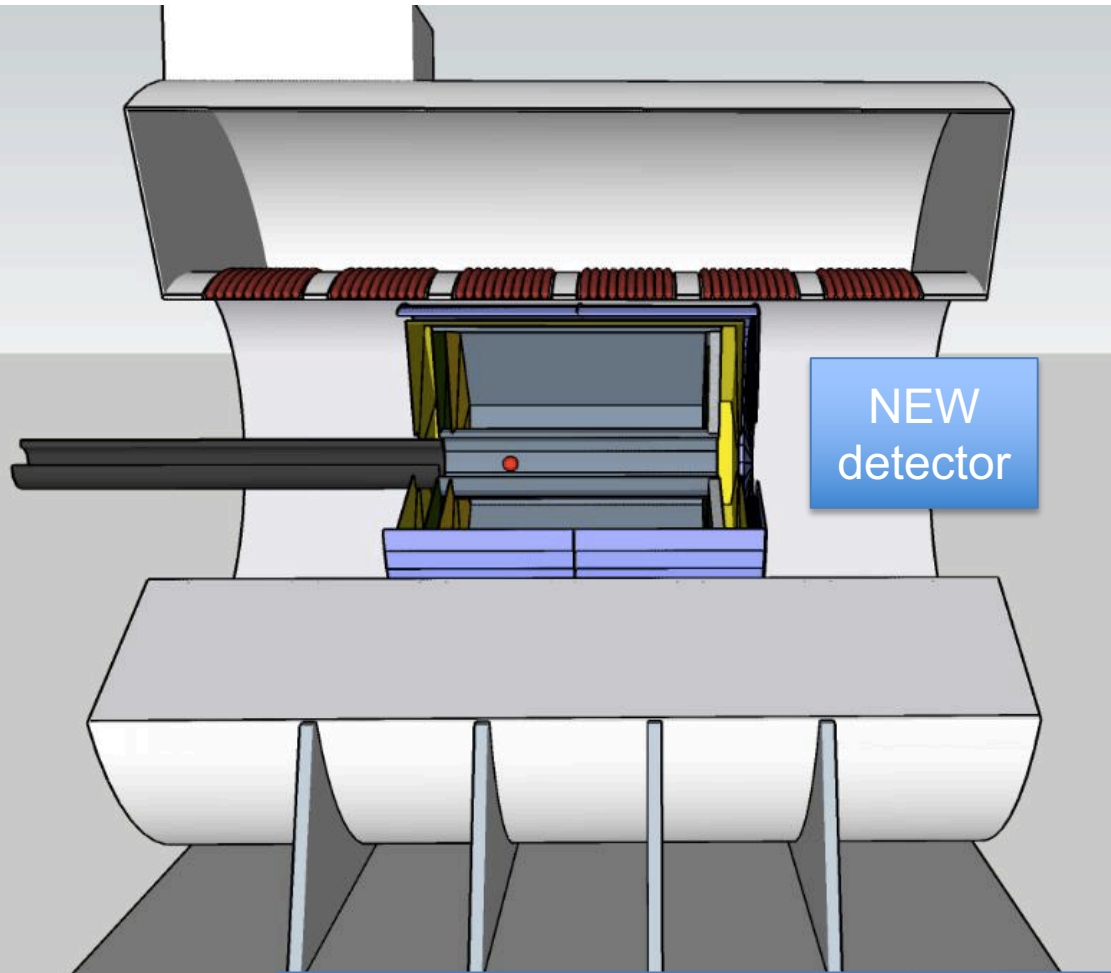
TPC + Solenoid



- Solenoid coil part is working on
- Design is based on the slide from Youngjin Kim
- Drawing bottom part of solenoid is ongoing
- TPC is colored as gold (not yellow)
- Target and beamline design is latest one

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Design for the detector is accepted?

Setup for production and test lab

- **Clean-booth setup**
 - work for one person

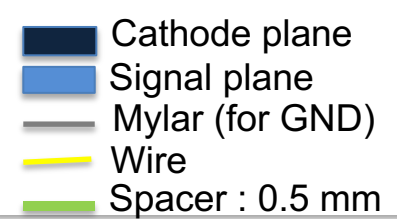


- **P-10 gas circulation system setup**
 - 47L gas prepared+regulator
 - Order the flow-meter and tube



- **Soldering tools and related materials are ready**

Prepare the prototype BDC

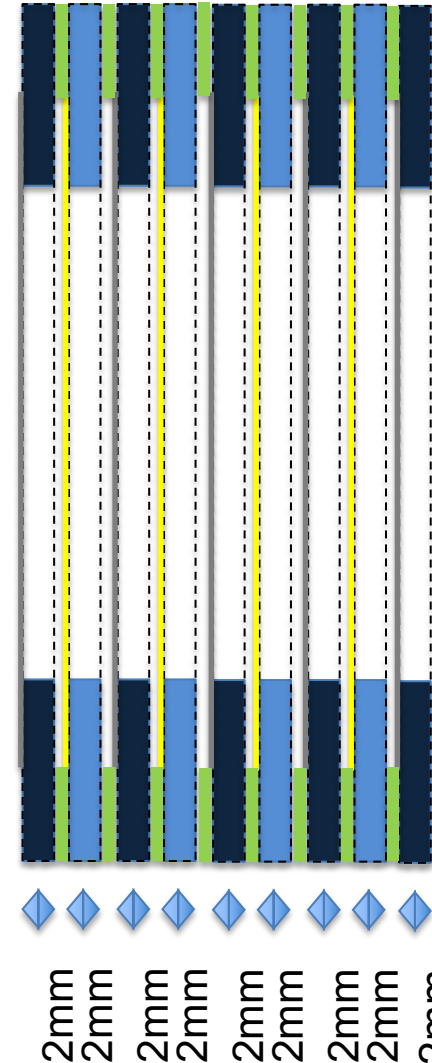
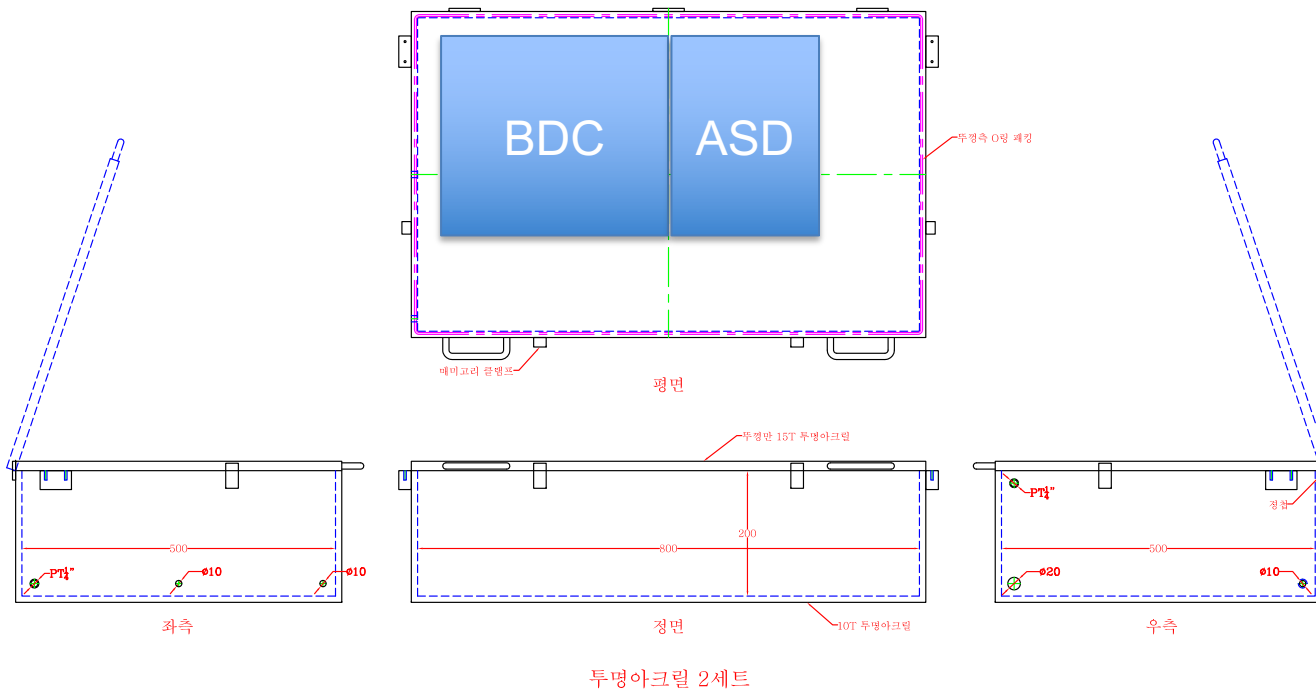


- **Plane wiring**

- Until now 1.5 planes wiring complete by Jaein with advice from Sanghoon (KRISS)
- For completion of wiring 1.5 planes, Jaein and piljun will visit KRISS for ~10-14 days, end of June-Beginning of July

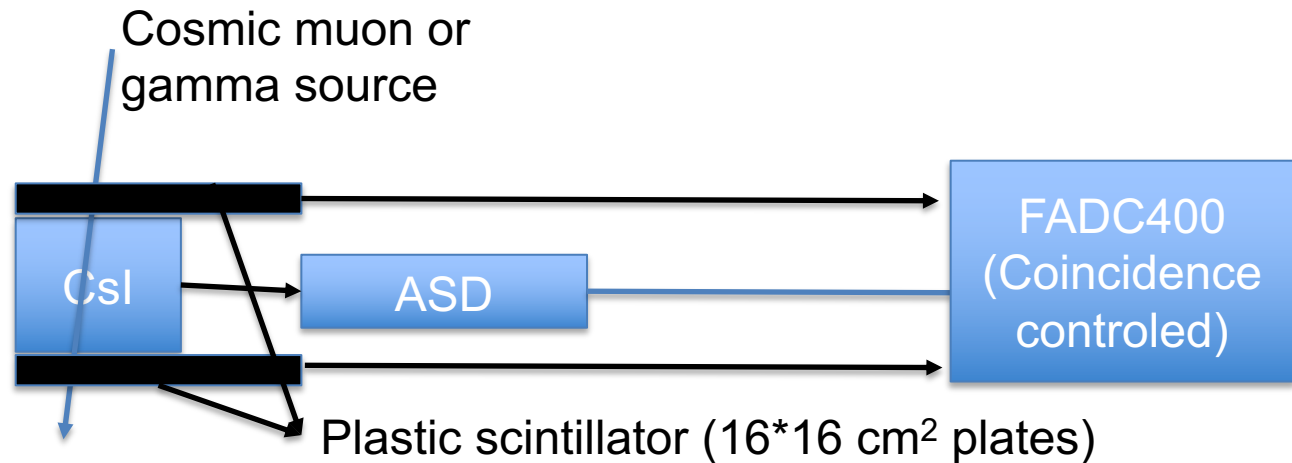
- **Acryl box ordered (w/ VAT, 2420000 won)**

- Order two acryl boxes for prototype BDC test
- Hope in ~ 3 weeks



Prepare for ASD board test

- Setup window desktop for DAQ with ASD boards
- 2 Power supplies for ASD power and connector ordered
- For detector performance test, coincidence logic with FADC400 (NOTICE) is ongoing



- Before next meeting, plan to ASD boards test

Plan before next meeting

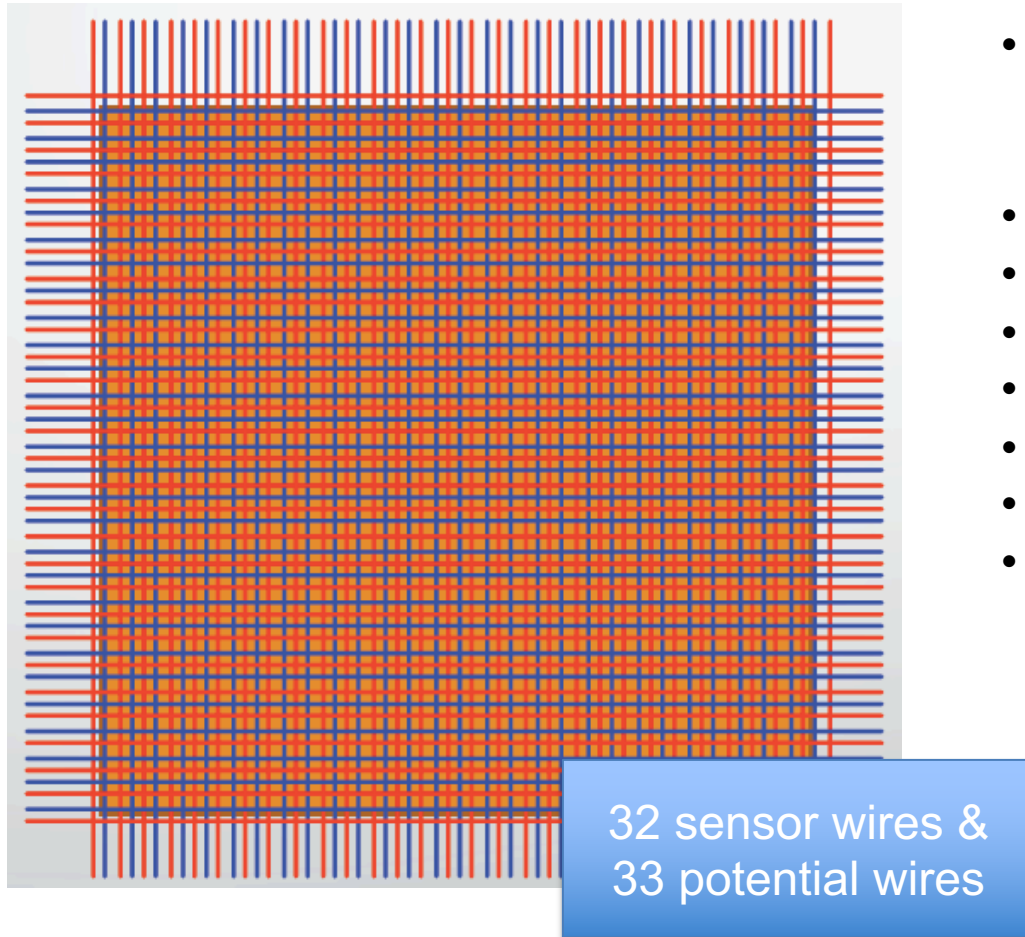
- Have a complete BDC prototype chamber
- Complete with ASD board with DAQ code test
- Prepare working test with one BDC prototype chamber

Supplement materials

크린부스 내 구비장비 가견적 (With Jaein)

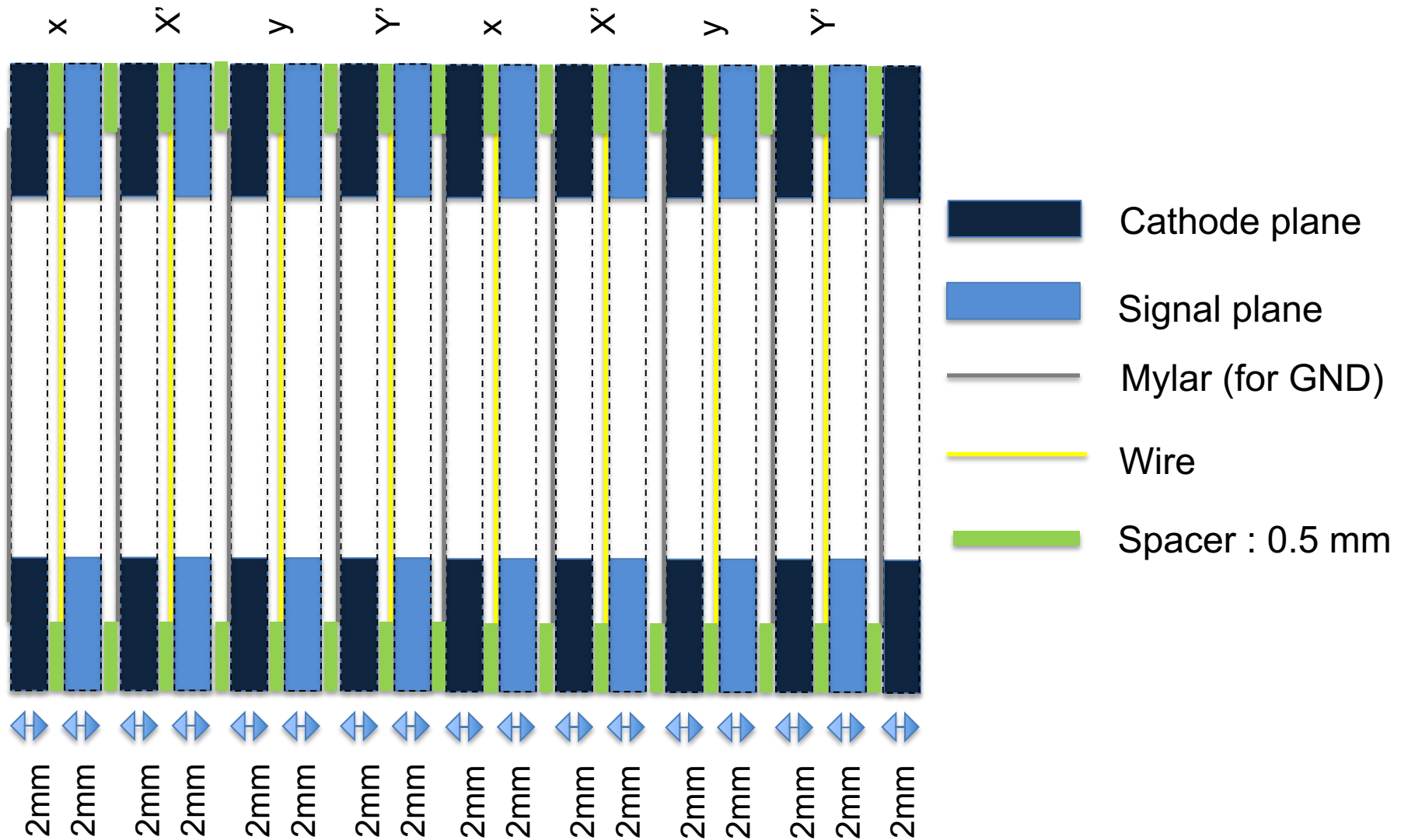
Product	Serial	Price	Remarks
LV PowerSupply	GPD-3303S	608217	Eleparts (719000)
ASD LV connector	S6P-VH(LF)(SN)	25 pieces*910=22750	eleparts
18 AWG 실리콘 와이어 6색 SET (30m:5m*6)	EPXMUUDH	24100	eleparts
멀티미터	FLUKE-17B+	140000	eleparts
인두기			
무연인두기+인두팁	Hakko FX-951	304000	eleparts
무연실납(0.3mm, 약233m)	HS-341	49000	eleparts
초음파 클리너		~1000000 - 1500000	
Ion Blower		352000	
플렉스 펜		9000	
도르래		9400	
플라스틱 고정대 (or 볼트)		~ 10000	
전자저울	0.01 g 정밀도의 저울	220000	
기판을 고정시키는 판, 와이어를 걸어두는 고리		KRISS에 의뢰 필요 (CNC 선반으로 직접가공)	
절연테이프 등 추가		<100000	약 3550000원 예상 크린부스 시공비까지 8995000원

Preliminary design of LAMPS BDC



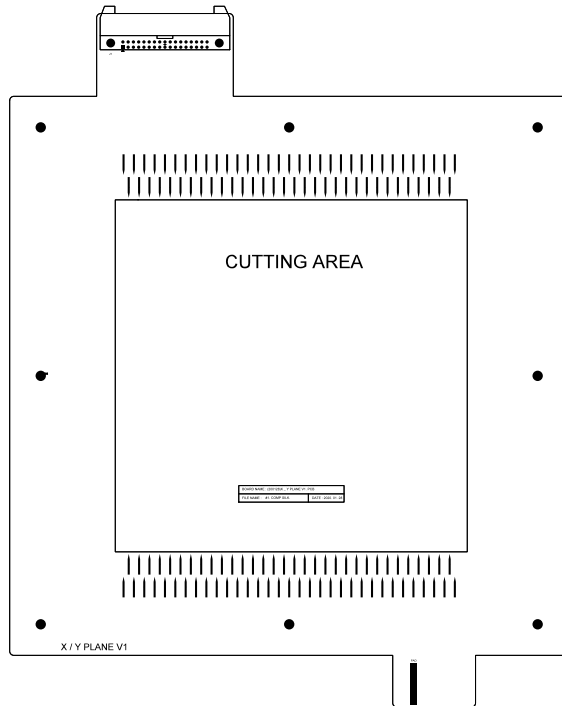
- Active area : 160 * 160 mm²
 - Cutting area : 170 * 170 mm²
- Drift length : 2.5 mm
- Configuration: xx'yy'xx'yy'
- Anode wire : 20 μm
- Potential wire : 80 μm
- # of CH of x/x' plane : 32 ch
- # of CH of y/y' plane : 32 ch
- # of ASD module : 4 ASD
 - 2 planes / 1 ASD

Preliminary design of LAMPS BDC

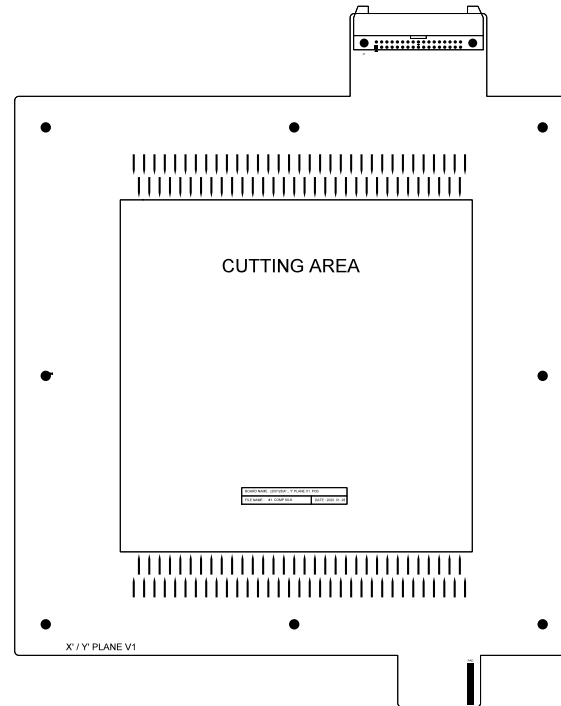


Design of prototype BDC

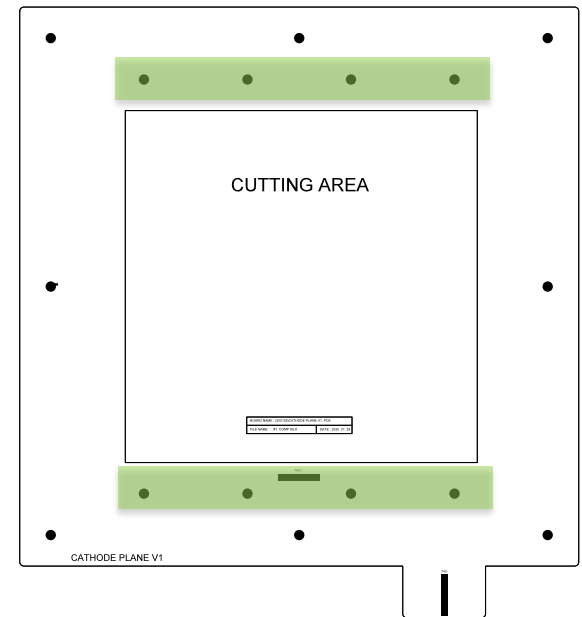
xy plane



x'y' plane



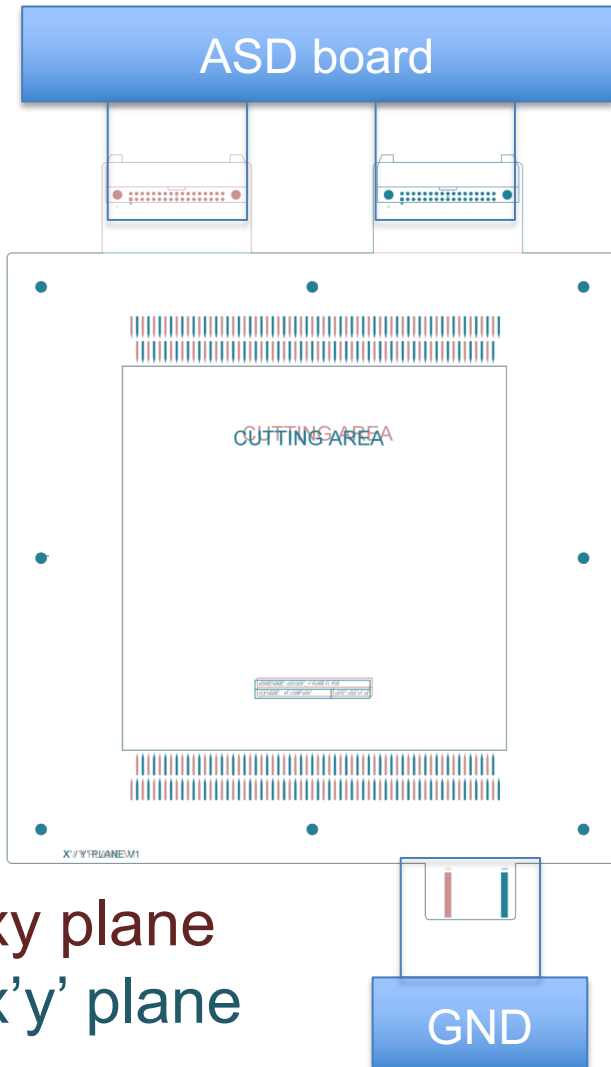
cathode plane



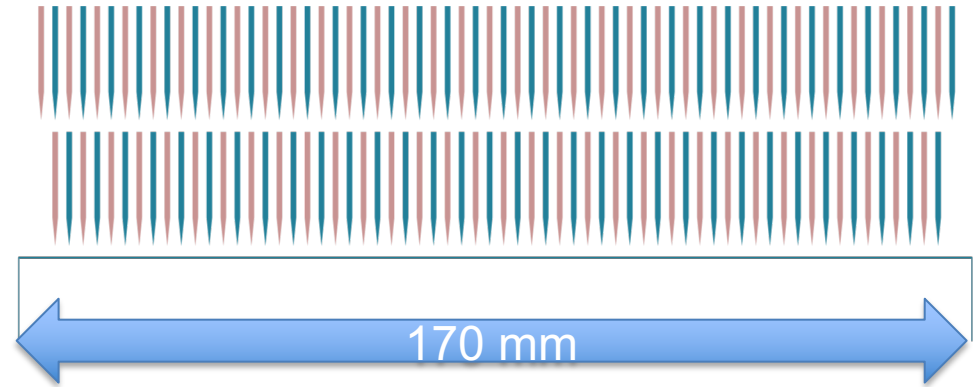
Holes for gas circulation

Designed by Sanghoon Hwang

Design of prototype BDC



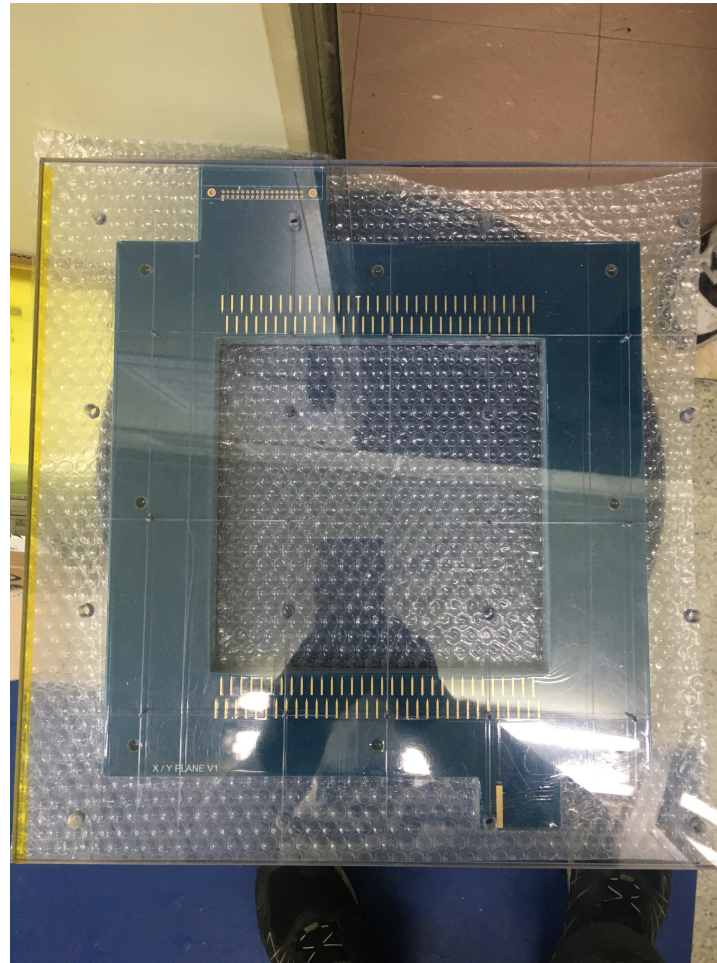
Drift length : 2.5 mm



xy plane is shifted from x'y' plane
with 2.5 mm spacing

Designed by Sanghoon Hwang

Design of prototype BDC



Designed by Sanghoon Hwang

Hyunchul Kim (LAMPS meeting, Jun. 19th. 2020)

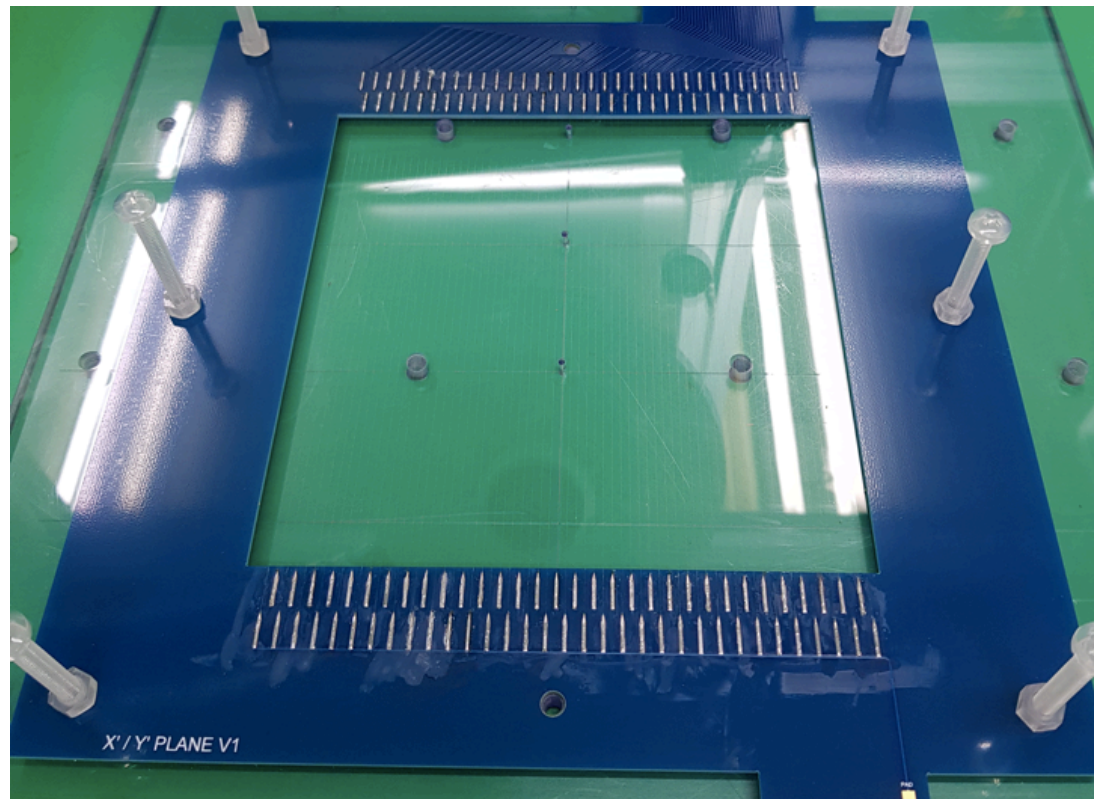
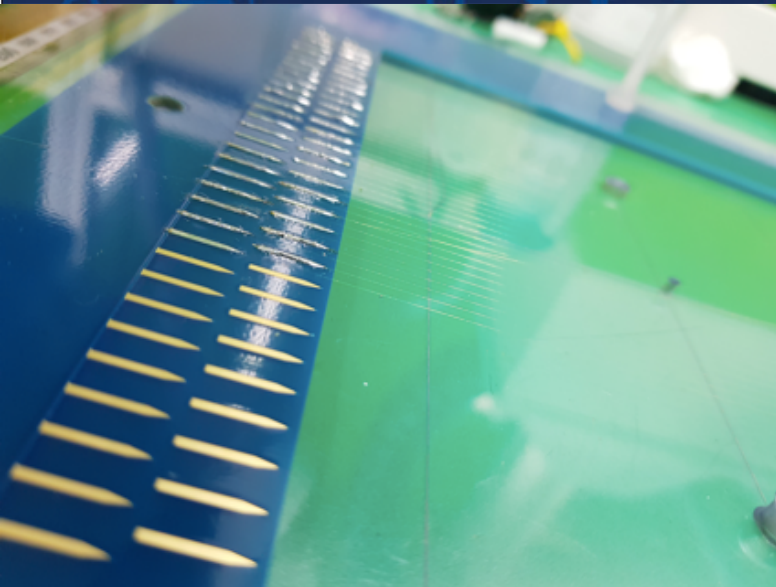
Setup for wiring in clean room, KRISS

- Jaein (undergraduate student) worked at KRISS in Feb. 10-14



Wire thickness : $16\ \mu\text{m}$
Gold coated tungsten wires
for signal and potential wires

Plane after wiring

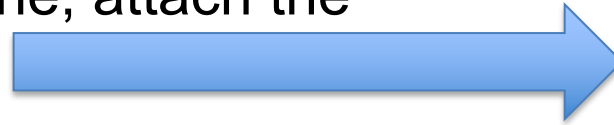


Wiring is done in 1 xy plane and 1 x'y' plane

Next step for prototype BDC

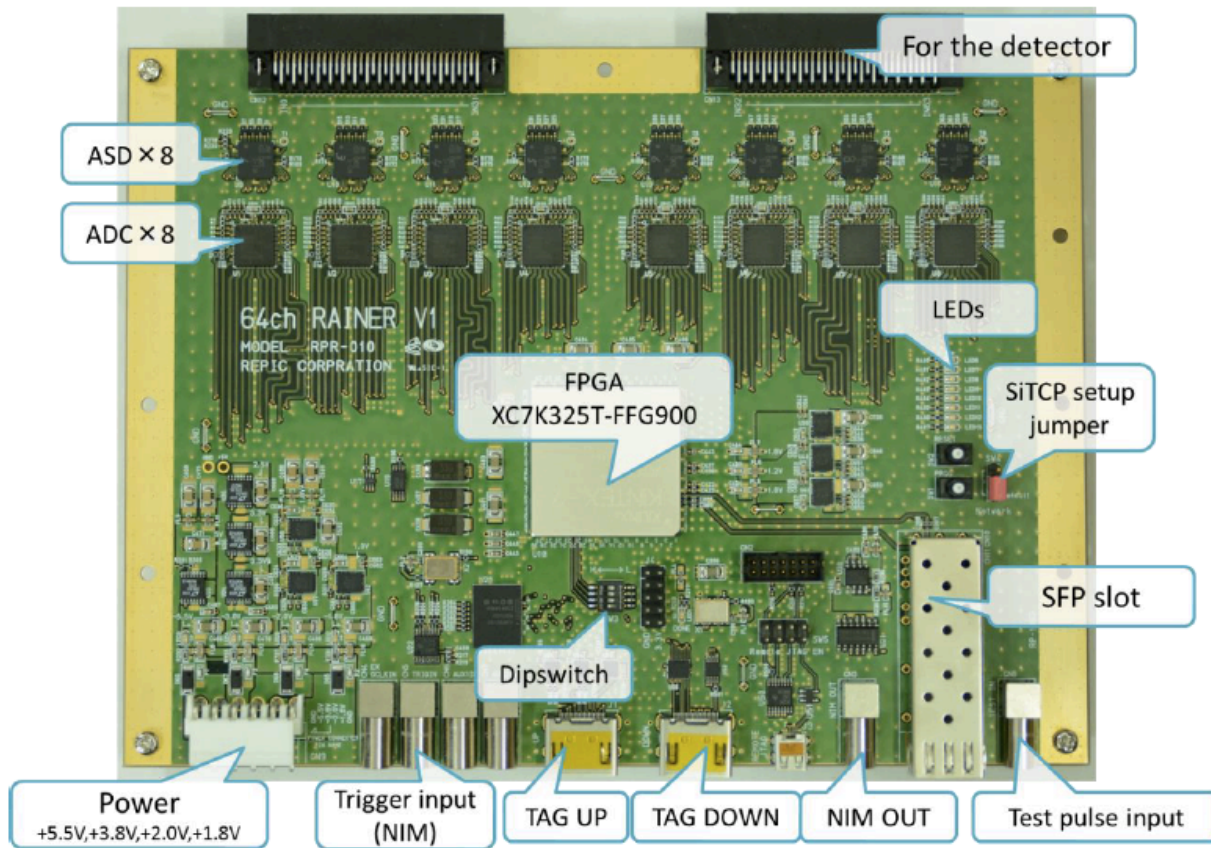
- **Cleaning and assembly chamber**

- Clean wired planes in the machine
- On the cathode plane, attach the metalized mylar
- To keep 2.5 mm spacing between mylar and wires, attach the spacer (0.5 mm thickness)
- And assembly chamber for the test
 - Cathode-xy plane-Cathode-x'y' plane-Cathode



- **Hope to continue in next week..**

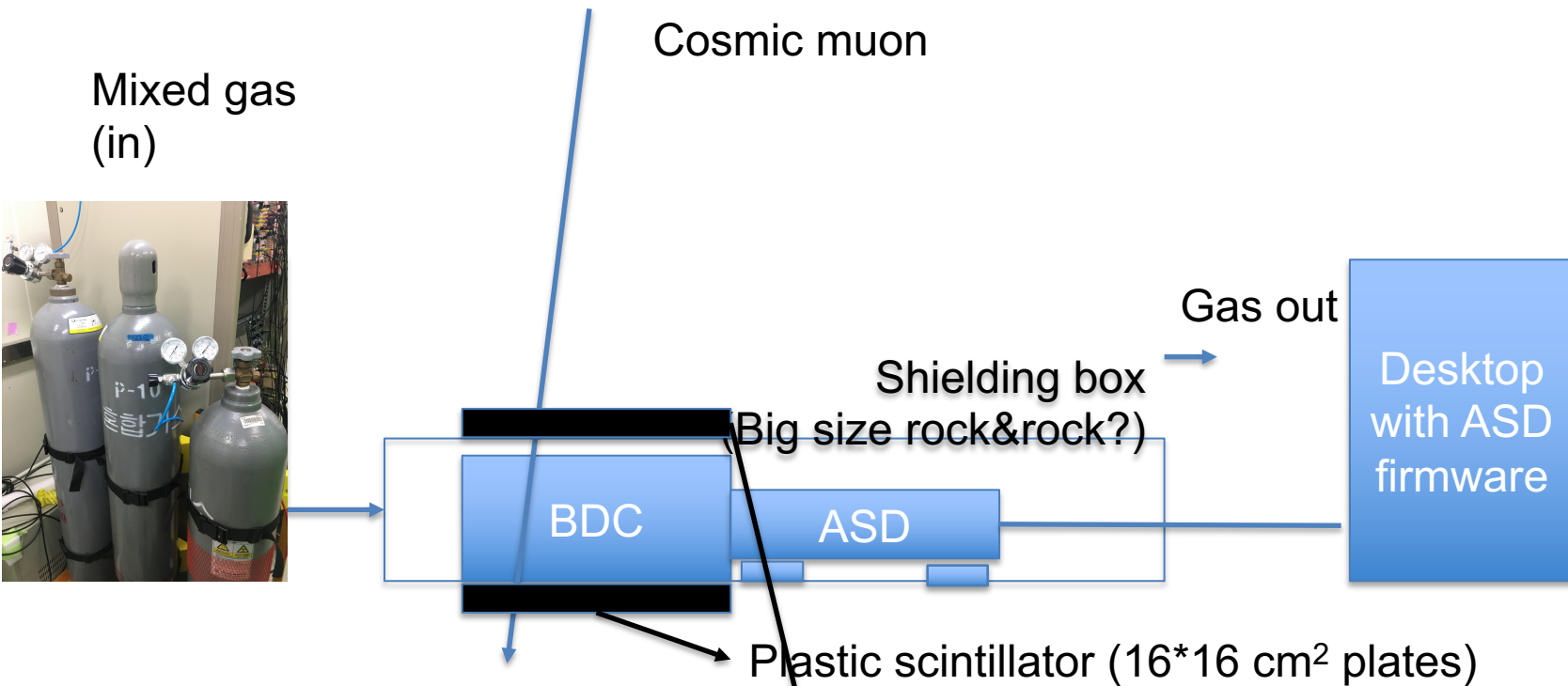
Preparation of ASD board test



- Power input connector : S6P-VH
- 6 wires should be connected (GND, +5.5V, +3.8V, +2.0V, +1.8V, GND), Maximum current : 5A
- 2 * 2 channel power supply are needed
 - 1 from KRISS, 1 will be ordered



(Preliminary) setup of the prototype BDC test



- Continue to discuss about the setup