Weekly report

SNU

BongHo Kim
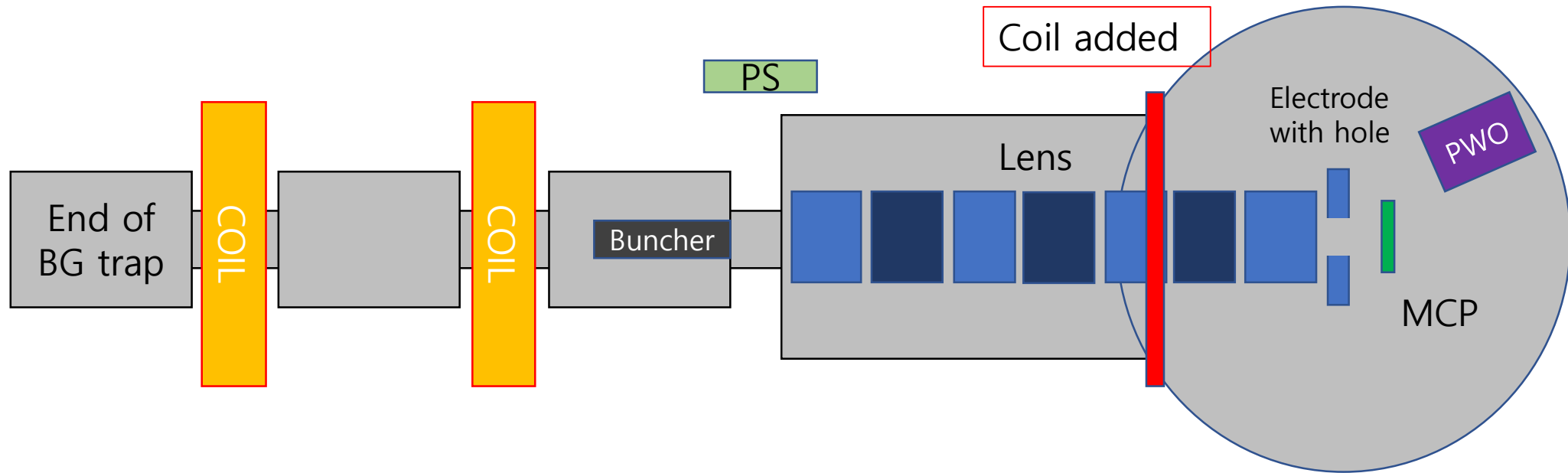
e+ beam line lens test

15KV(all lens)

500V; 4kV; 4kV
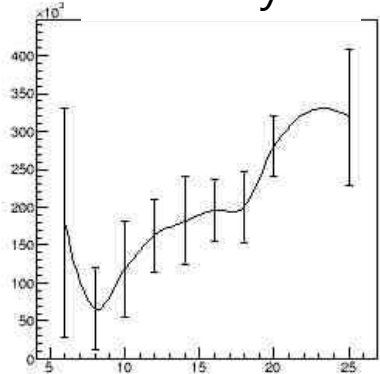
14KV(all lens)

500V; 6kV; 6kV

- Lens focusing is checked with changing HV for three lens.
- Beam center is moved by lens focusing.
- Beam shape is like hole shape in last electrode (focusing is not working well)
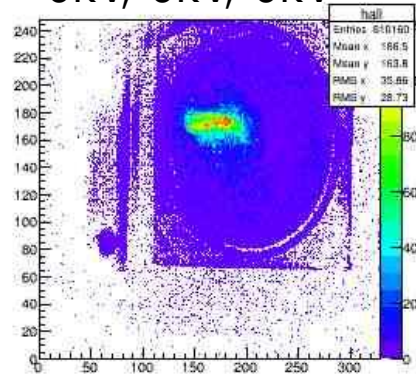
e+ beam line (near antion chamber)

- Buncher is used for beam acceleration (~4.5kV)
- Lens is used for focusing by positive HV below 30kV by three lens
- MCP is installed with grid (front of MCP) to monitor beam profile and for energy scan
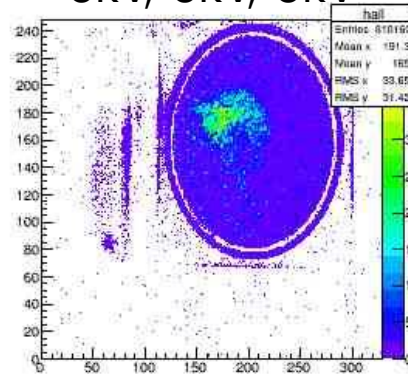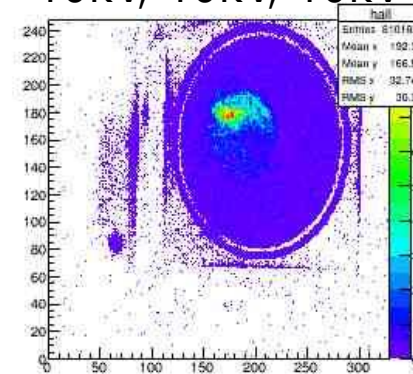- Time distribution is tested with new switch in the end of BG trap (switch for beam dump)
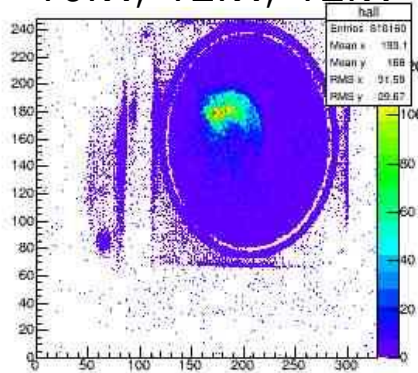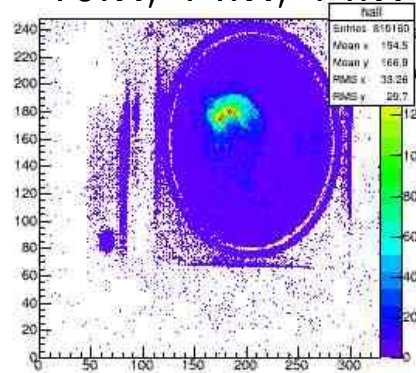
Intensity

6kV, 6kV, 6kV

8kV, 8kV, 8kV

10kV, 10kV, 10kV

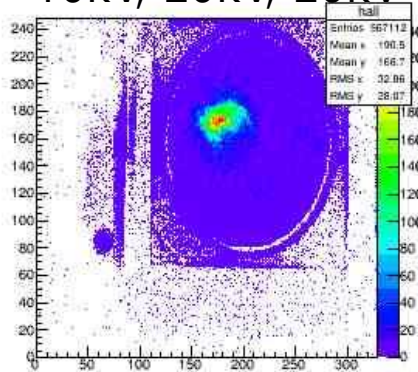**10kV, 12kV, 12kV**

10kV, 14kV, 14kV
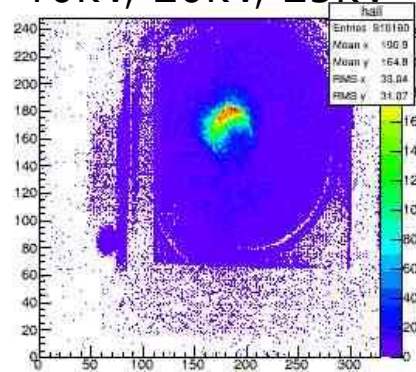
10kV, 16kV, 16kV

10kV, 18kV, 18kV

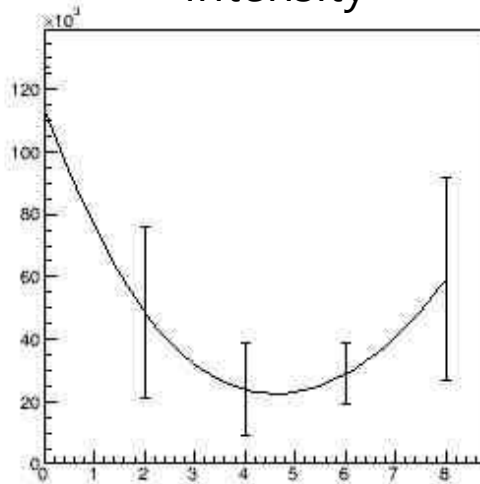**10kV, 20kV, 20kV**

10kV, 20kV, 25kV

- Each pictures are averaged by 10 pictures
- As HV in lens is increased, intensity is increased and beam size become smaller
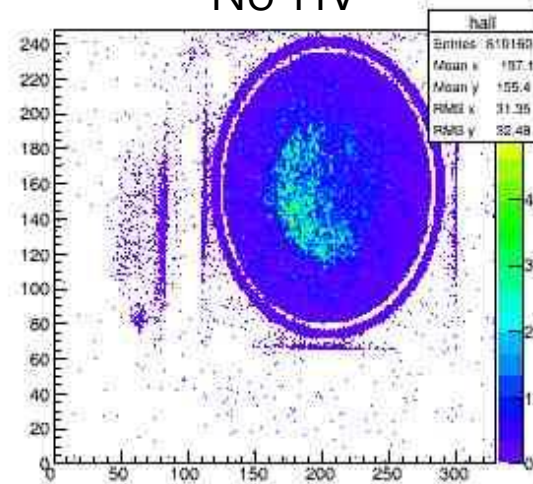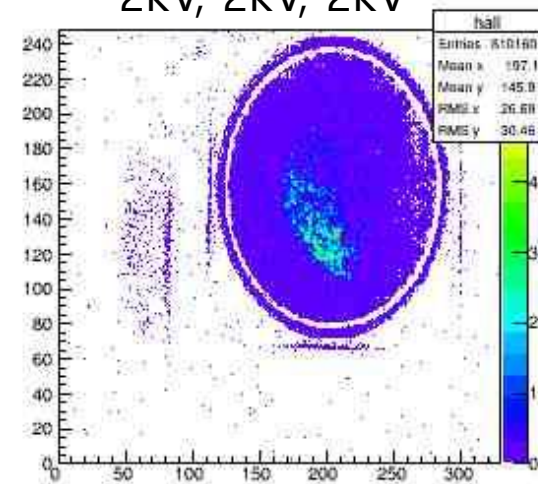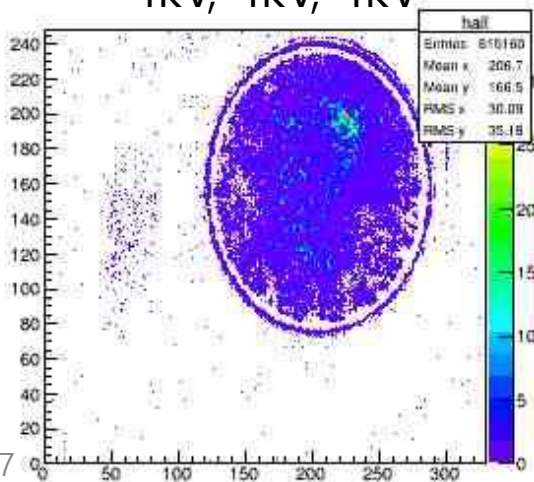- Each picture has different scale for color but intensity in beam center is increased.
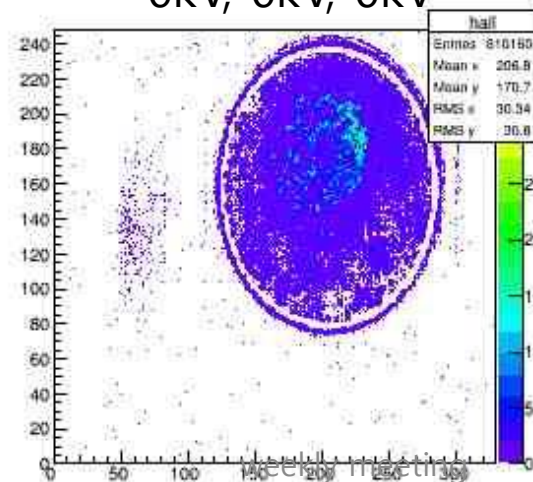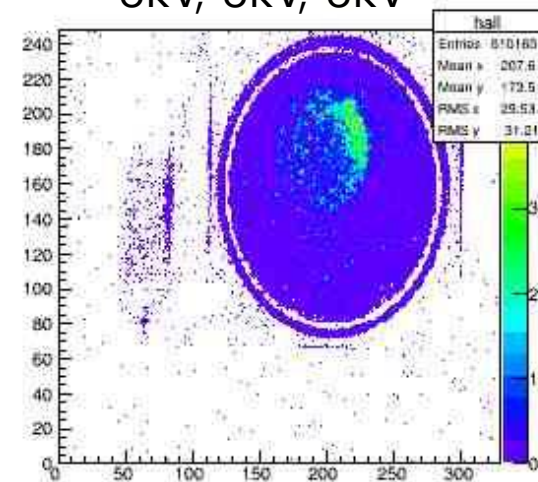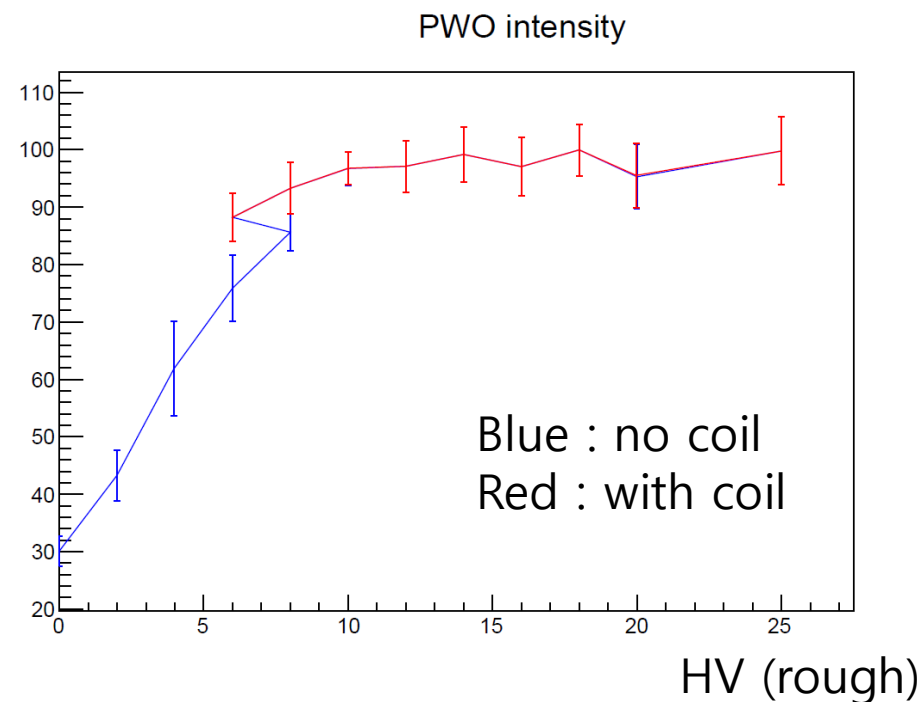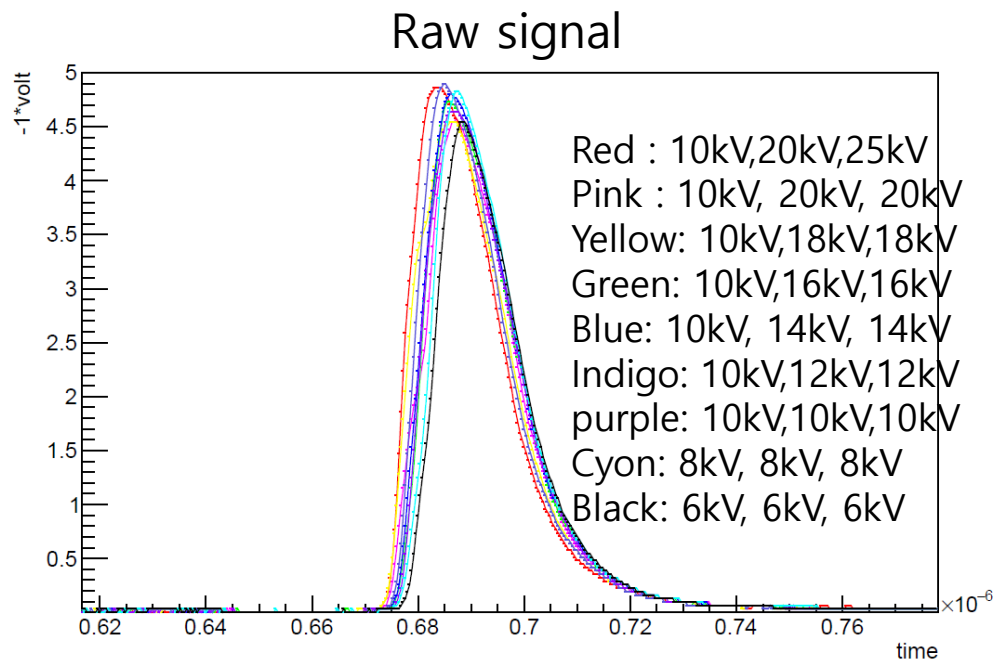
Beam data without coil

Intensity

No HV

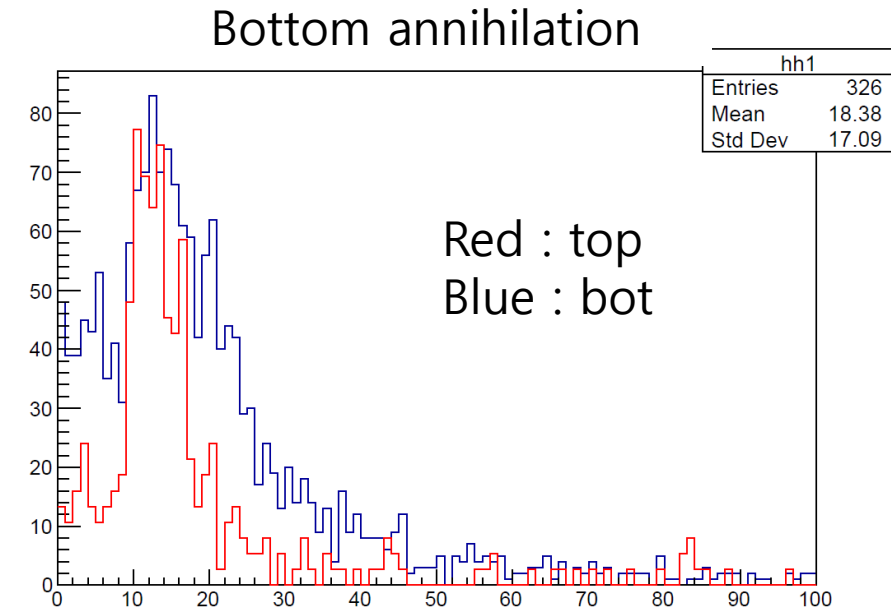2kV, 2kV, 2kV

4kV, 4kV, 4kV

6kV, 6kV, 6kV

8kV, 8kV, 8kV

PWO data

Raw signal

Red : 10kV,20kV,25kV
Pink : 10kV, 20kV, 20kV
Yellow: 10kV,18kV,18kV
Green: 10kV,16kV,16kV
Blue: 10kV, 14kV, 14kV
Indigo: 10kV,12kV,12kV
purple: 10kV,10kV,10kV
Cyon: 8kV, 8kV, 8kV
Black: 6kV, 6kV, 6kV

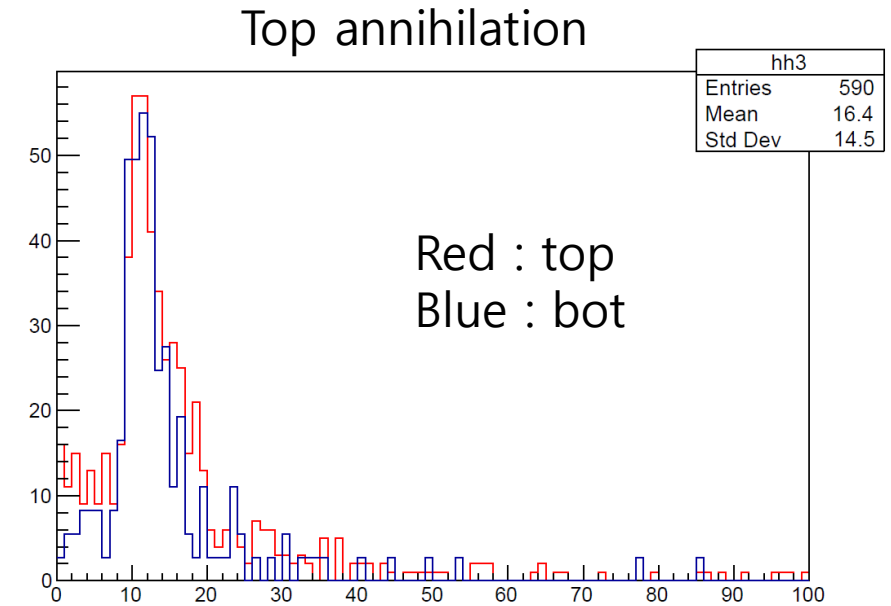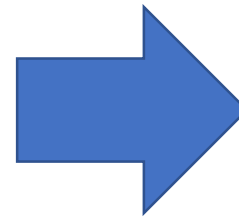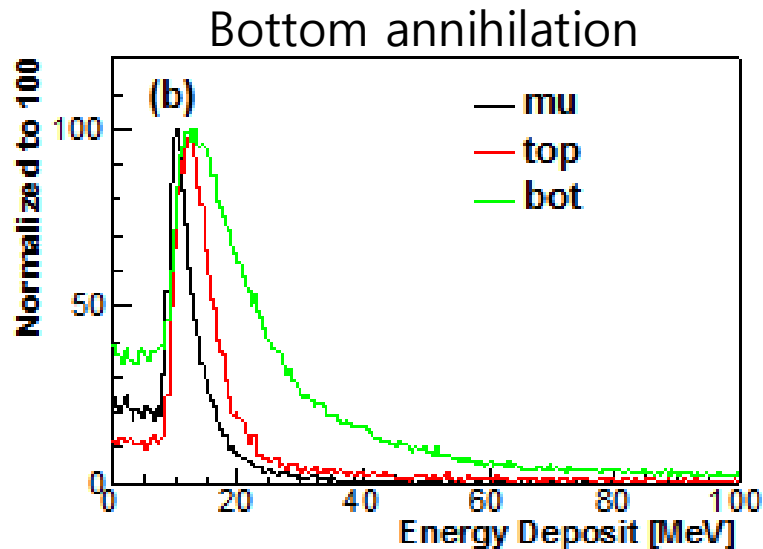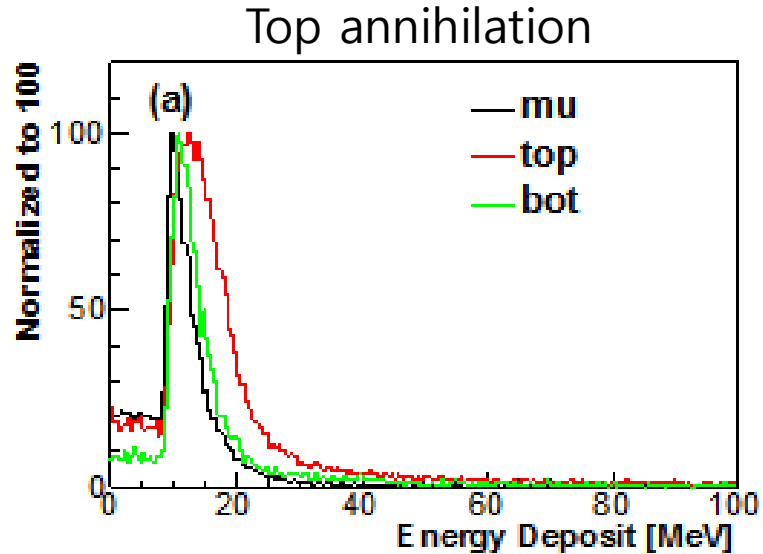### PWO intensity

Blue : no coil
Red : with coil

HV (rough)

- With coil, PWO signal is also increased.
- No big different for HV value in Lens. (small increase)
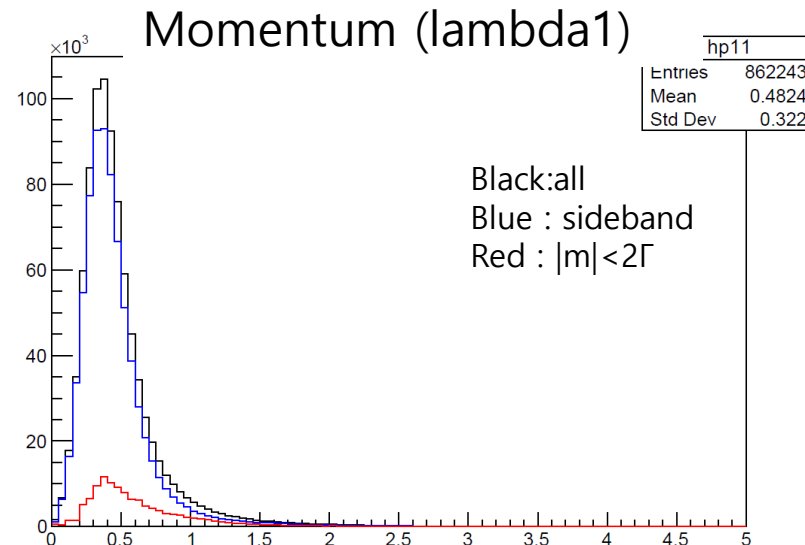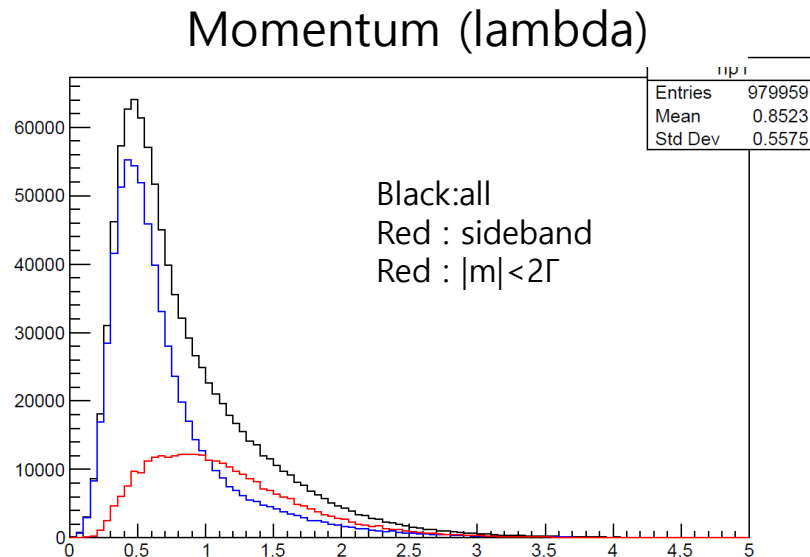
Status in CEA

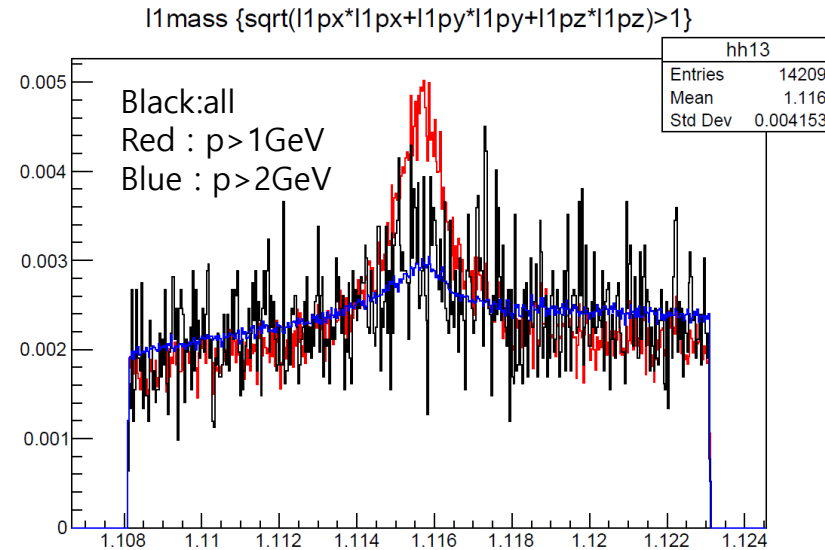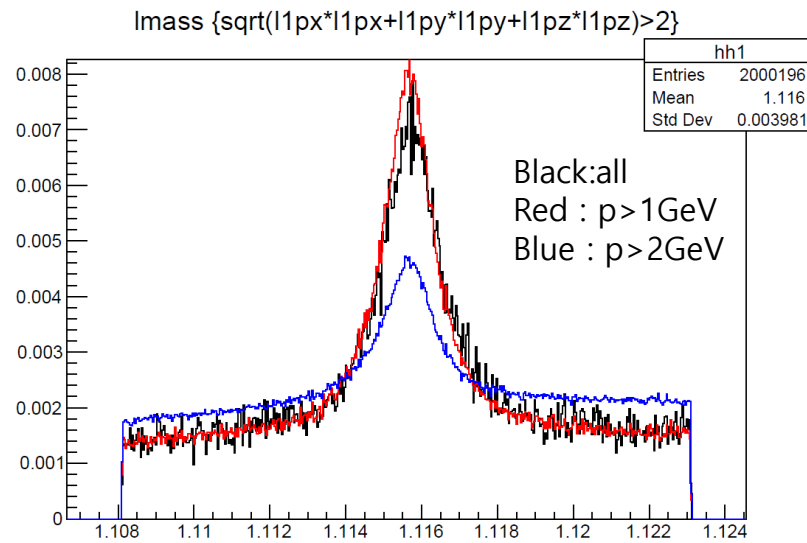- Because I forgot to turn off coil, I have tried to repair coil to new wires.
- In proton beam line, we changed broken support frame to new one.
- We also modify Faraday cup support to change Faraday cup position.
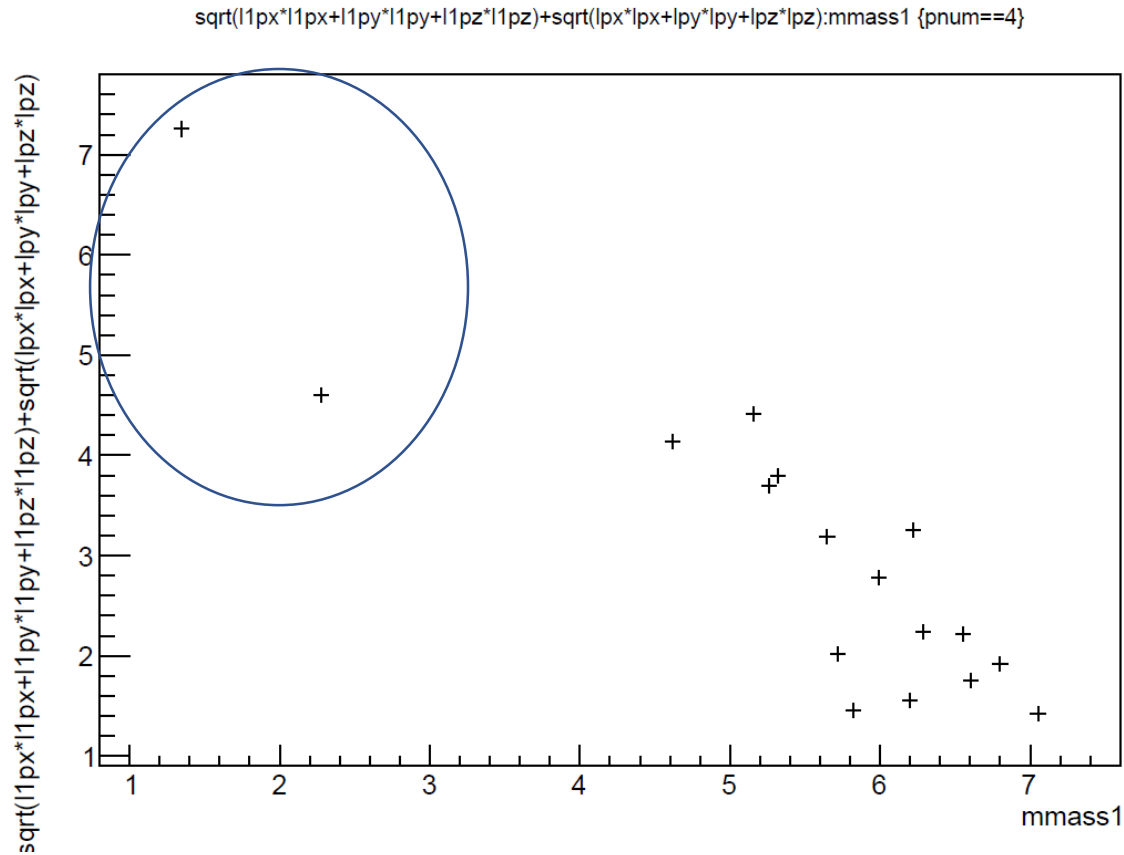
TOF simulation check

Top annihilation

Bottom annihilation

Top annihilation

Red : top
Blue : bot

Bottom annihilation

Red : top
Blue : bot

S-particle search (Y(1,2)→S +ΛΛ(+p,π,γ))

Missing mass (m(Y(1S)-Λ-Λ1)

sqrt(l1px*l1px+l1py*l1py+l1pz*l1pz)+sqrt(lpx*lpx+lpy*lpy+lpz*lpz):mmass1 {pnum==4}

- Only two proton PID(p|pi) cut>0.4
- Almost no event is in missing mass distribution below 3GeV.

To do list

- Positron beam profile check with more coils in Antion chamber.
- Positron beam energy scan.
- Positron beam time distribution check.

- TOF simulation with 4mm thickness.
- S-particle search preparation.