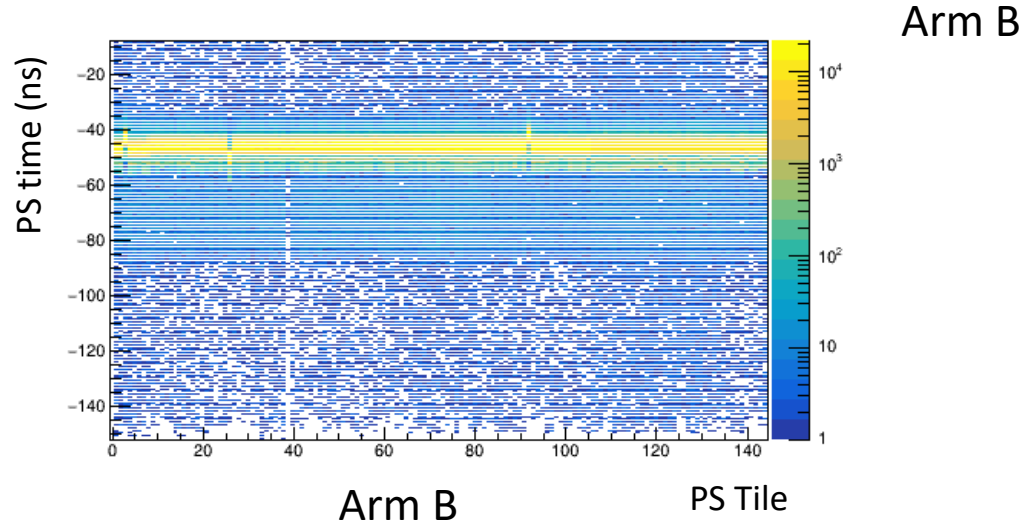


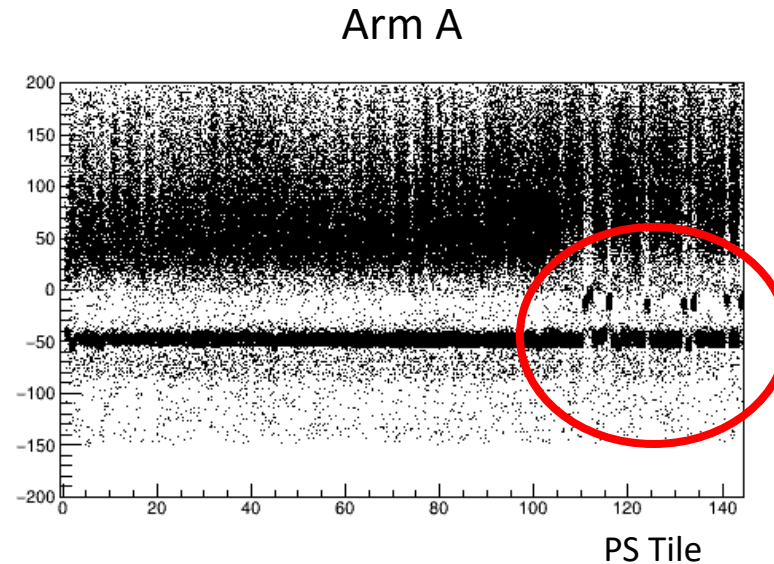
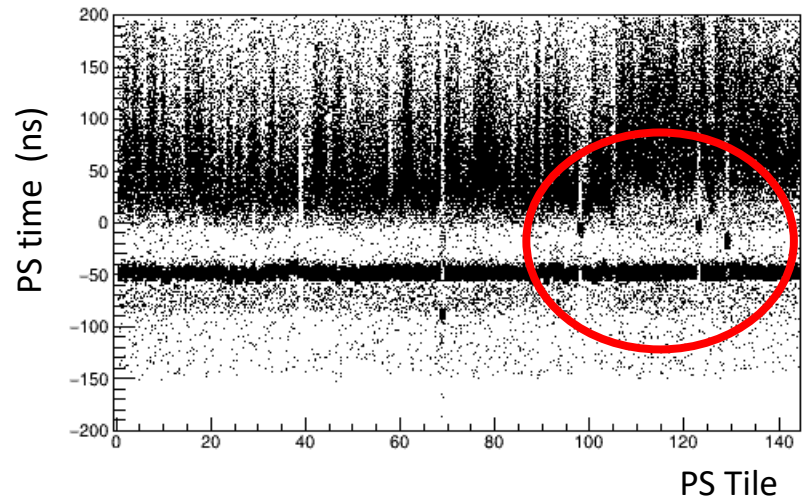
Data Quality Check

Sasha, July 10, 2020

The photon flux decreased by about 10 % during lumi check/tuning in May
- issues with the detector calibration



Run 61914



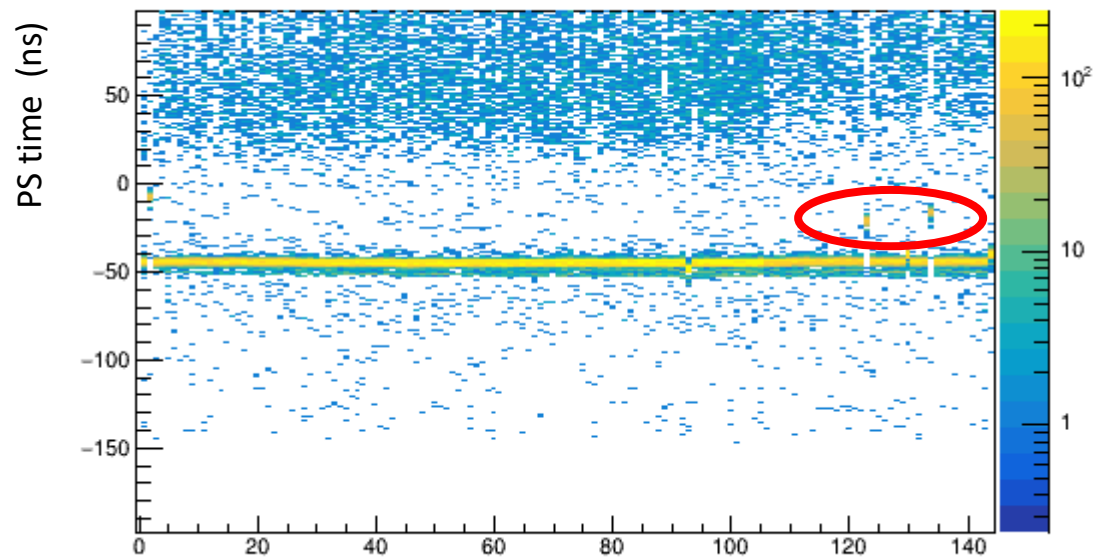
Data Quality Check

- Timing calibration have been changed several times during this year
- Changes resulting to the significant yield drop (5/13/2020)

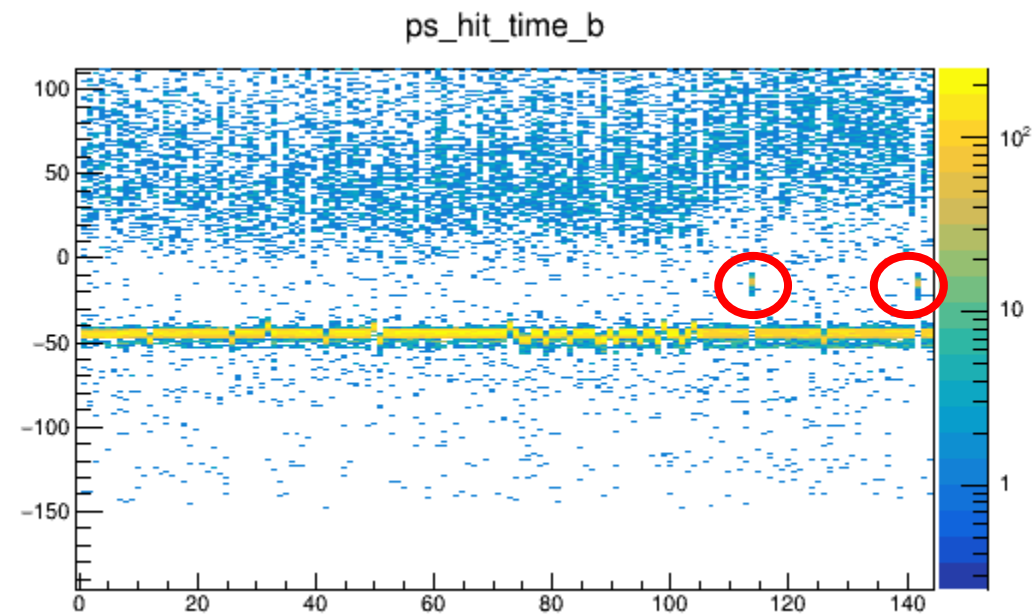
289942	2020-05-26	14-01-32	2020-05-26	14-01-32	default	71350L-71350L
285343	2020-05-13	19-48-20	2020-05-13	19-48-20	default	61909L-69999L
285342	2020-05-13	19-48-19	2020-05-13	19-48-19	default	61908L-61908L
285341	2020-05-13	19-48-18	2020-05-13	19-48-18	default	61906L-61907L
285340	2020-05-13	19-48-17	2020-05-13	19-48-17	default	61905L-61905L
285339	2020-05-13	19-48-16	2020-05-13	19-48-16	default	61894L-61904L
285338	2020-05-13	19-48-15	2020-05-13	19-48-15	default	61893L-61893L
285337	2020-05-13	19-48-15	2020-05-13	19-48-15	default	61892L-61892L
285336	2020-05-13	19-48-14	2020-05-13	19-48-14	default	61891L-61891L
285335	2020-05-13	19-48-14	2020-05-13	19-48-14	default	61890L-61890L

PS Timing Calibration (Be Runs)

Run 61322



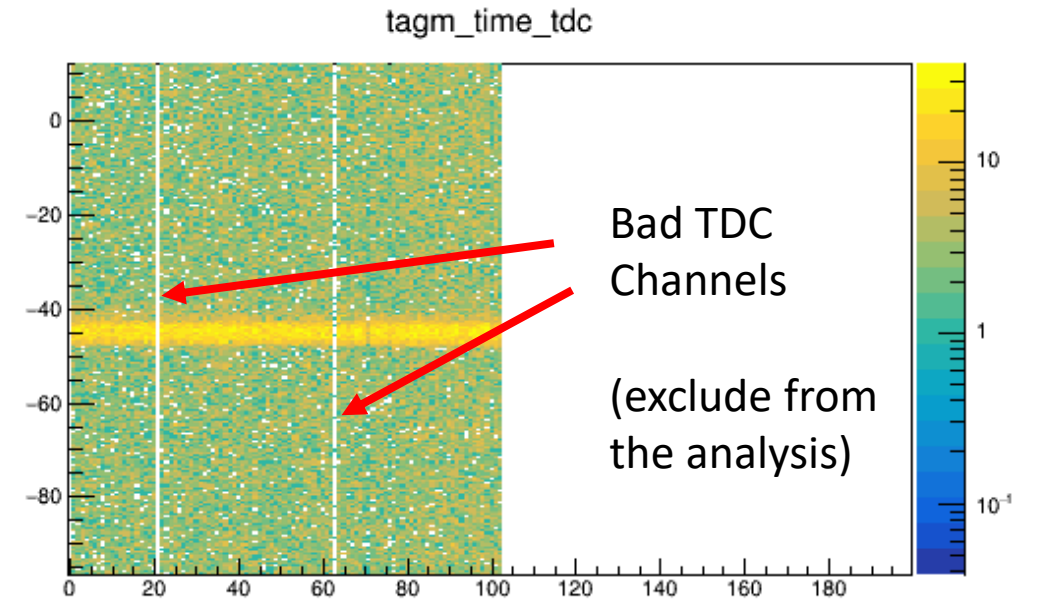
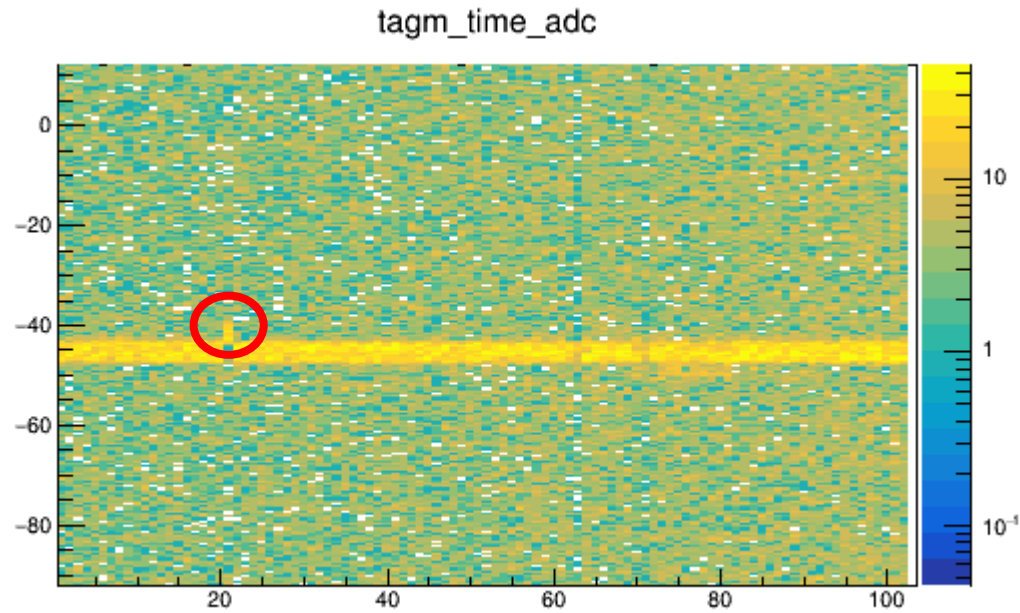
PS Tile



PS Tile

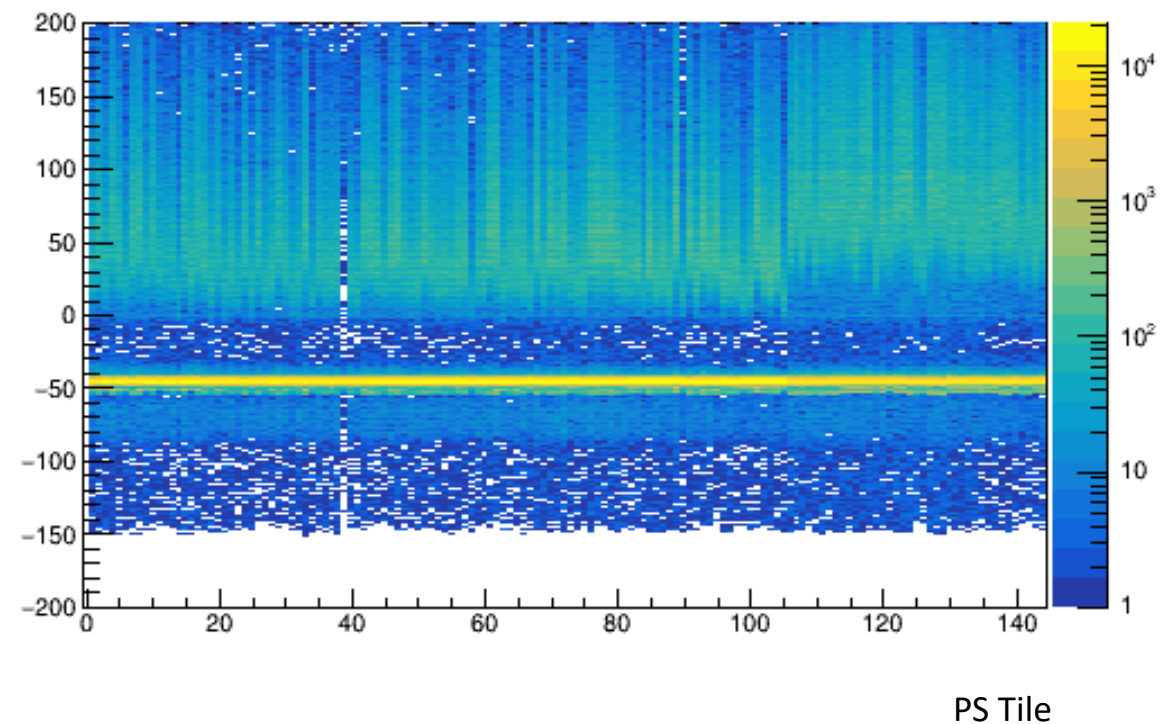
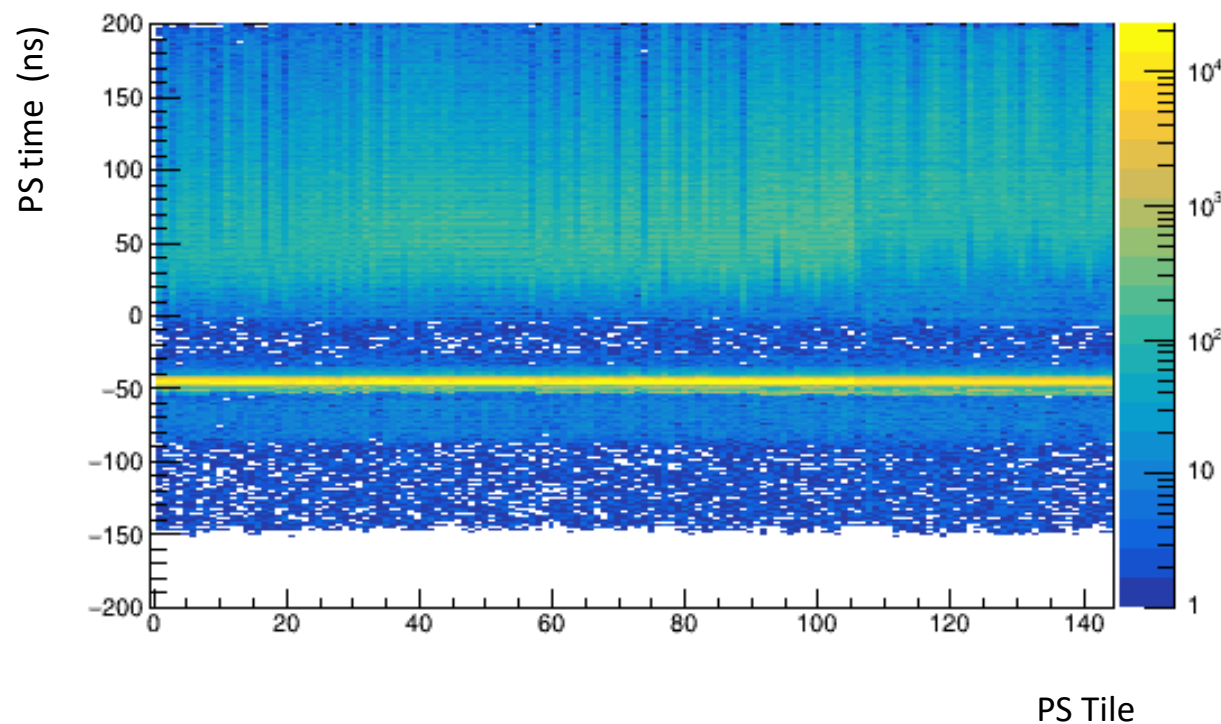
TAGM Timing Calibration (Be Runs)

Run 61322



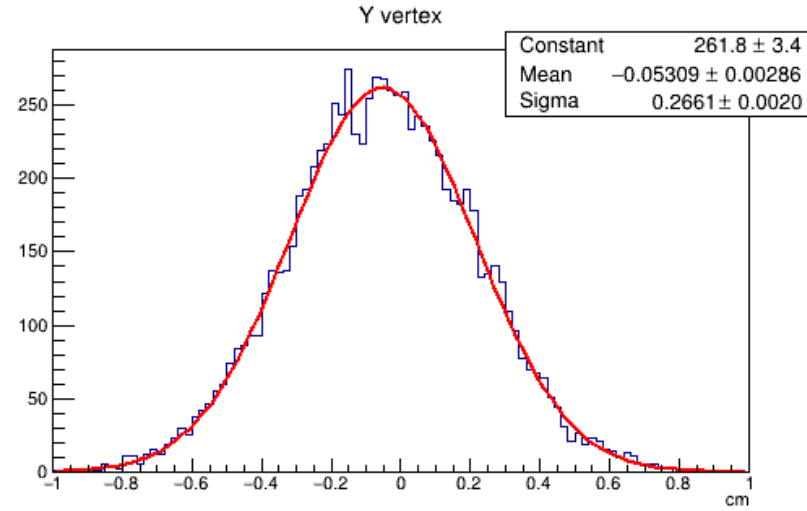
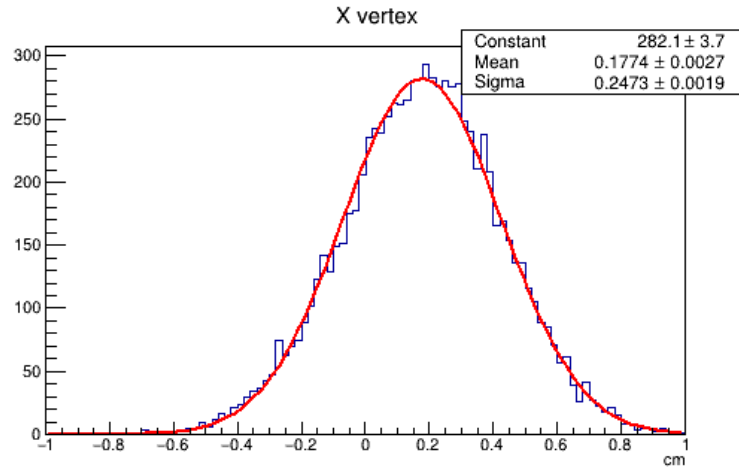
Recalibrating PS Timing Offsets

Run 61914



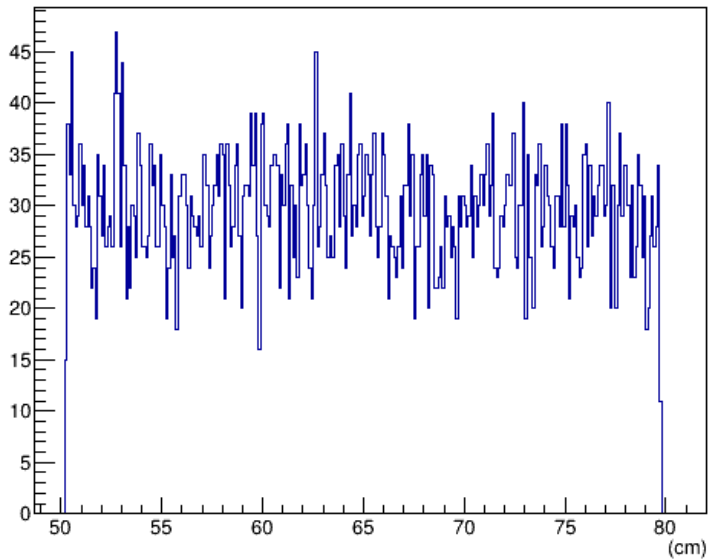
Plan: Recalibrate PS time for all PrimEx runs

MC Simulation (Vertex Position)



He Target

Z vertex (He target)



Beam Spot in the DB

```
File Edit View Search Terminal Help
136228 2018-07-19 08-20-58 2018-07-19 08-20-58 default 30000L-3
9999L
97571 2018-01-20 16-43-34 2018-01-20 16-43-34 default 40000L-49
999L
97570 2018-01-20 16-43-25 2018-01-20 16-43-25 default 10000L-19
999L
96997 2018-01-20 15-22-07 2018-01-20 15-22-07 default 0L-inf

/PHOTON_BEAM> cat --id 291889
-----
x      (double) 0.1755
y      (double) -0.05027
z      (double) 65.0
var_xx (double) 0.0625
var_xy (double) 0.
var_yy (double) 0.0729
var_xz (double) 0.
var_yz (double) 0.
var_zz (double) 0.
dxdz  (double) 0.0
dydz  (double) 0.0
-----
/PHOTON_BEAM> 
```

Backup Slides

Status of the Analysis

Sasha, June 26, 2020

Recent changes in the reconstruction in the middle of March - May:

- modification in parsing of fadc250 (Richard)
- new timing calibration of the TAGH/TAGM
- modifications in the TAGM hit reconstruction

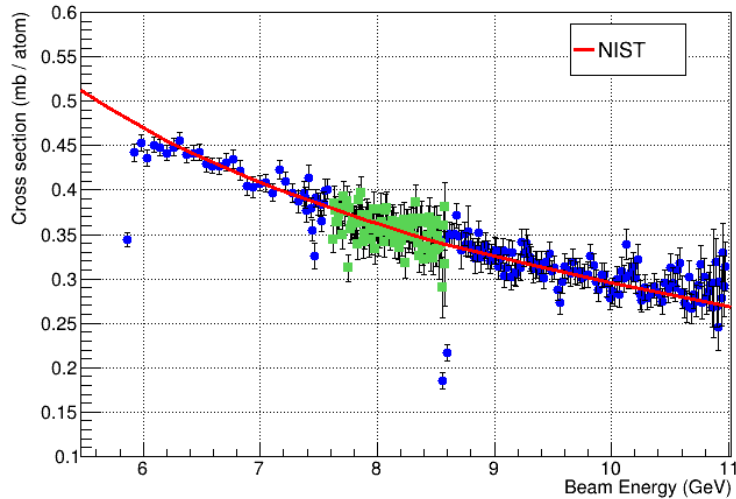
Can impact reconstruction of physics channels and lumi

- observe some decrease of hits having coincidence between tagger and PS detectors ($< 10\%$). Compare number of hits before and after changes

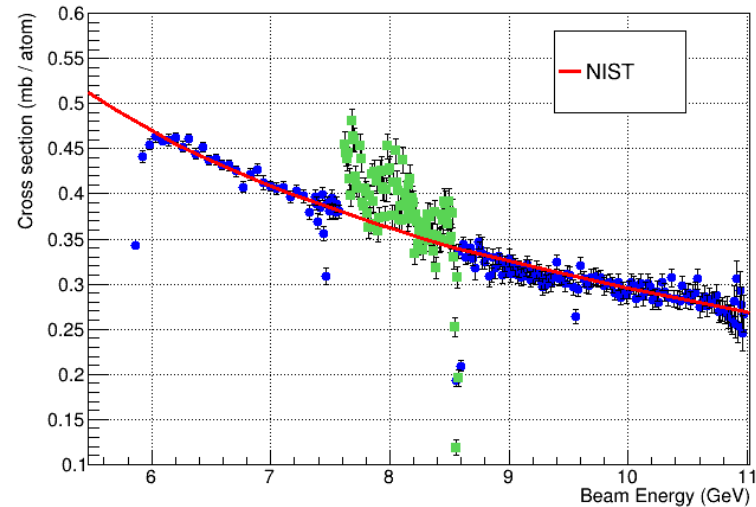
Trying to understand what's going on

Compton Cross Section

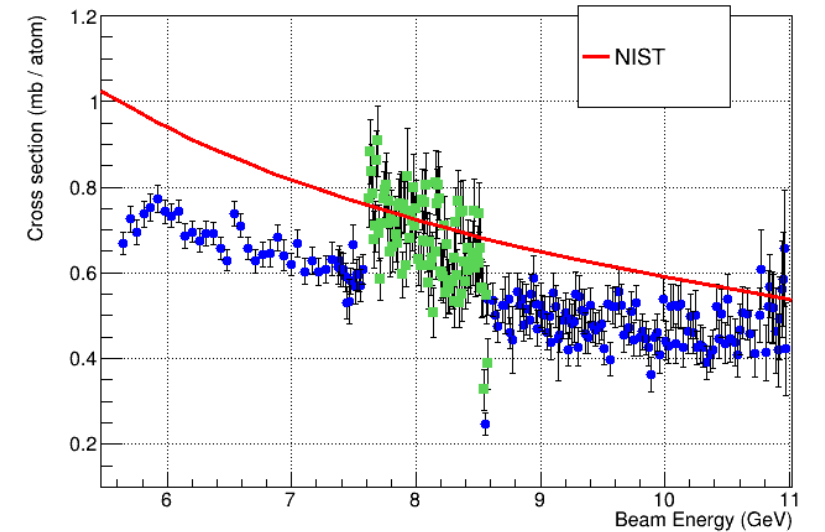
He target, Run 61914, 50 nA



He target, Run 61950, 100 nA



Be target, Run 61340, 200 nA



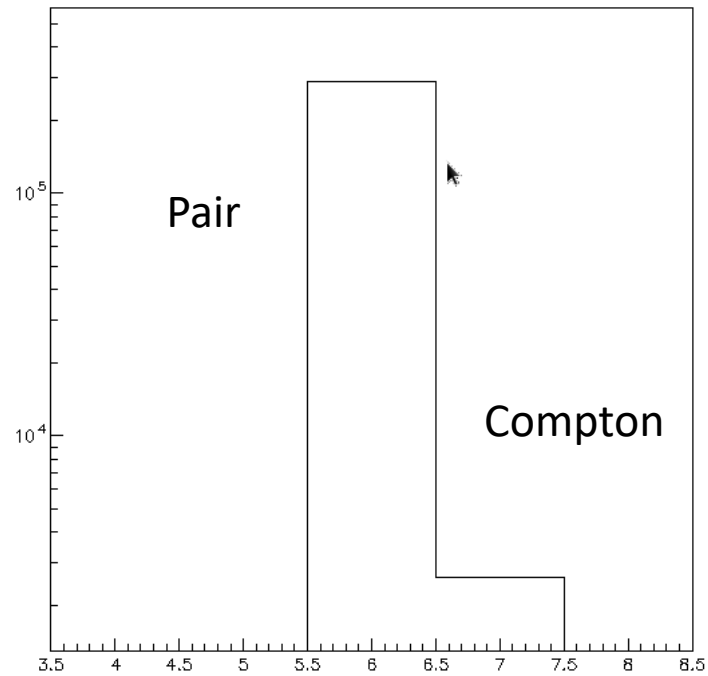
Lumi processed in March
(correct TAGM reconstruction)

TAGM not corrected

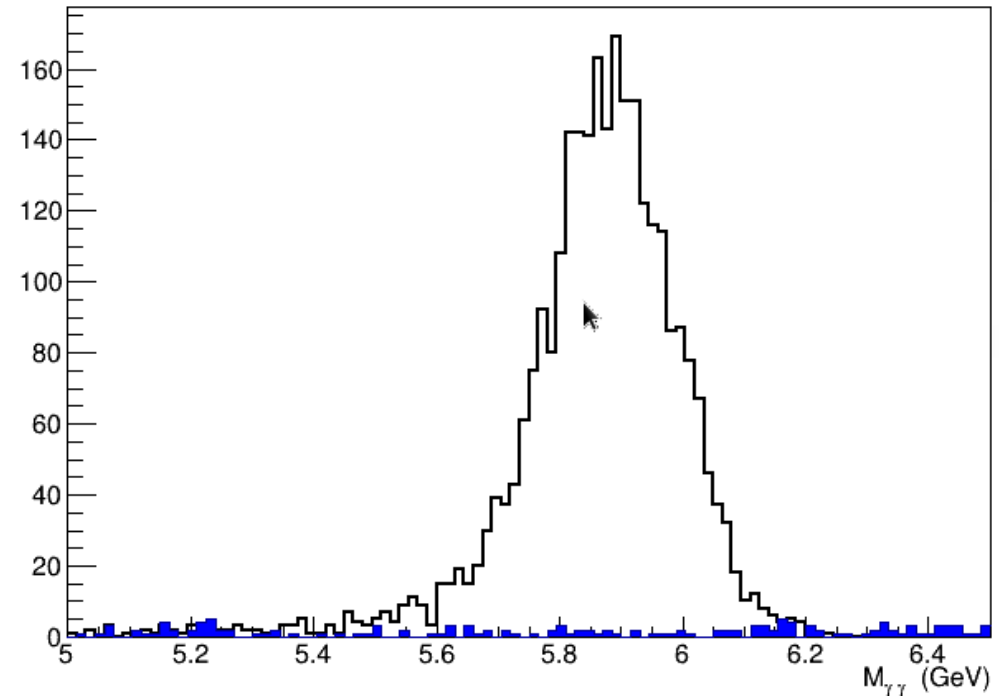
Assume the same efficiency as
for He runs

Pair Production in Geant

Geant process (LMEC)



σ (Compton) / σ (Pair) = 0.09 at 6 GeV (He target)
NIST - 0.087



Fraction of pair under Compton peak: 3 – 5 %

Background: Empty Target

Process larger empty target sample

Empty Target, 6 - 7 GeV

