# PVDIS DAQ

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# Outline

- Merging PVDIS with HAPPEX DAQ
- Compare scaler readings of PVDIS with HAPPEX
- Plans in the coming experiments

# Merging PVDIS with HAPPEX DAQ

## MOTIVATION

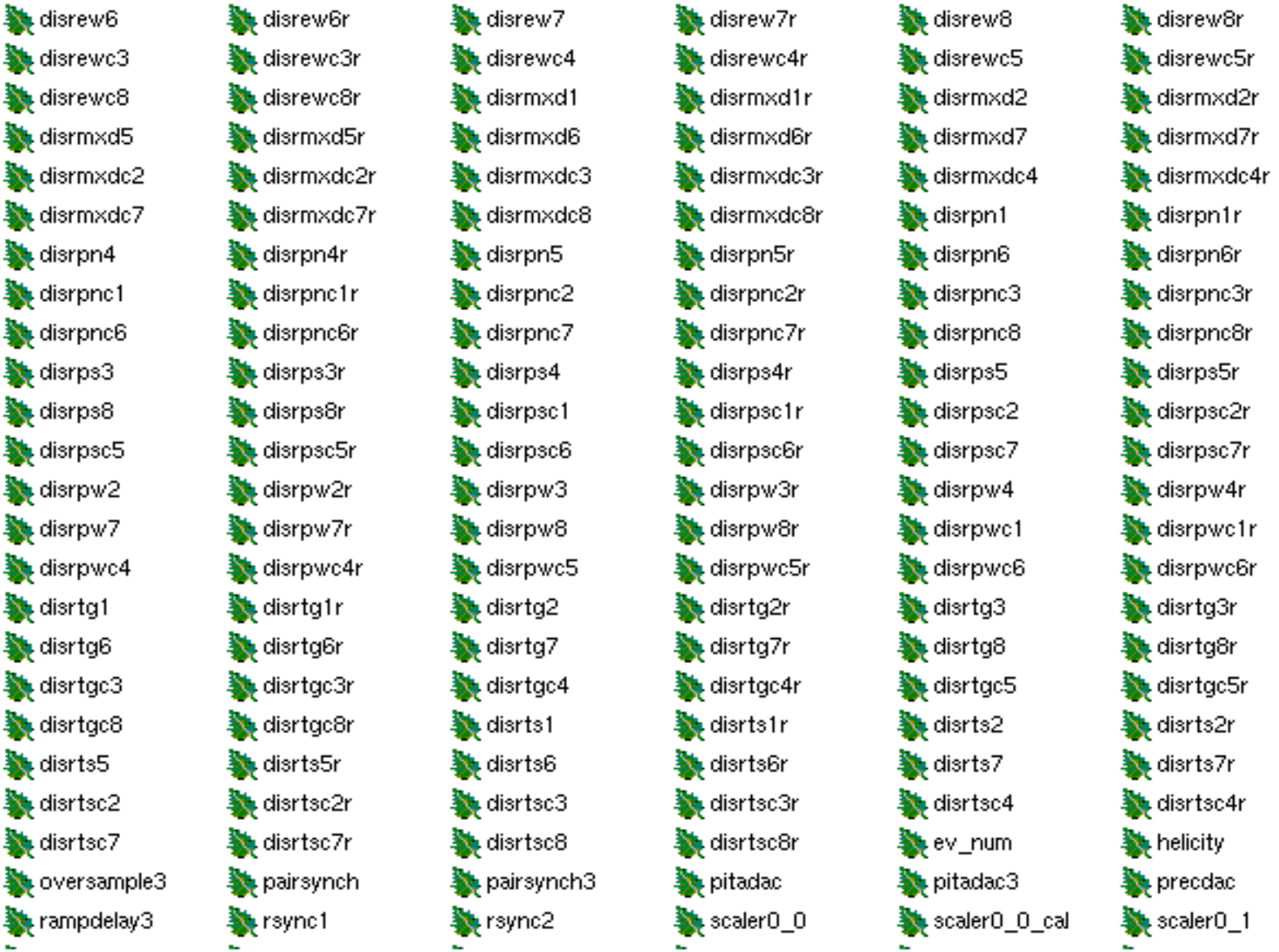
- Allow PVDIS to include information from beam-line, such as BPMs, BCMs, Lumis, etc

- Helicity will be delayed, read it in injector crate as during HAPPEX

- Can use parity analyzer which is an already well developed code. PVDIS scalers, which count electrons, pions, will “look like” a detector based on a scaler in PAN

# Merging PVDIS with HAPPEX DAQ

## R-Tree

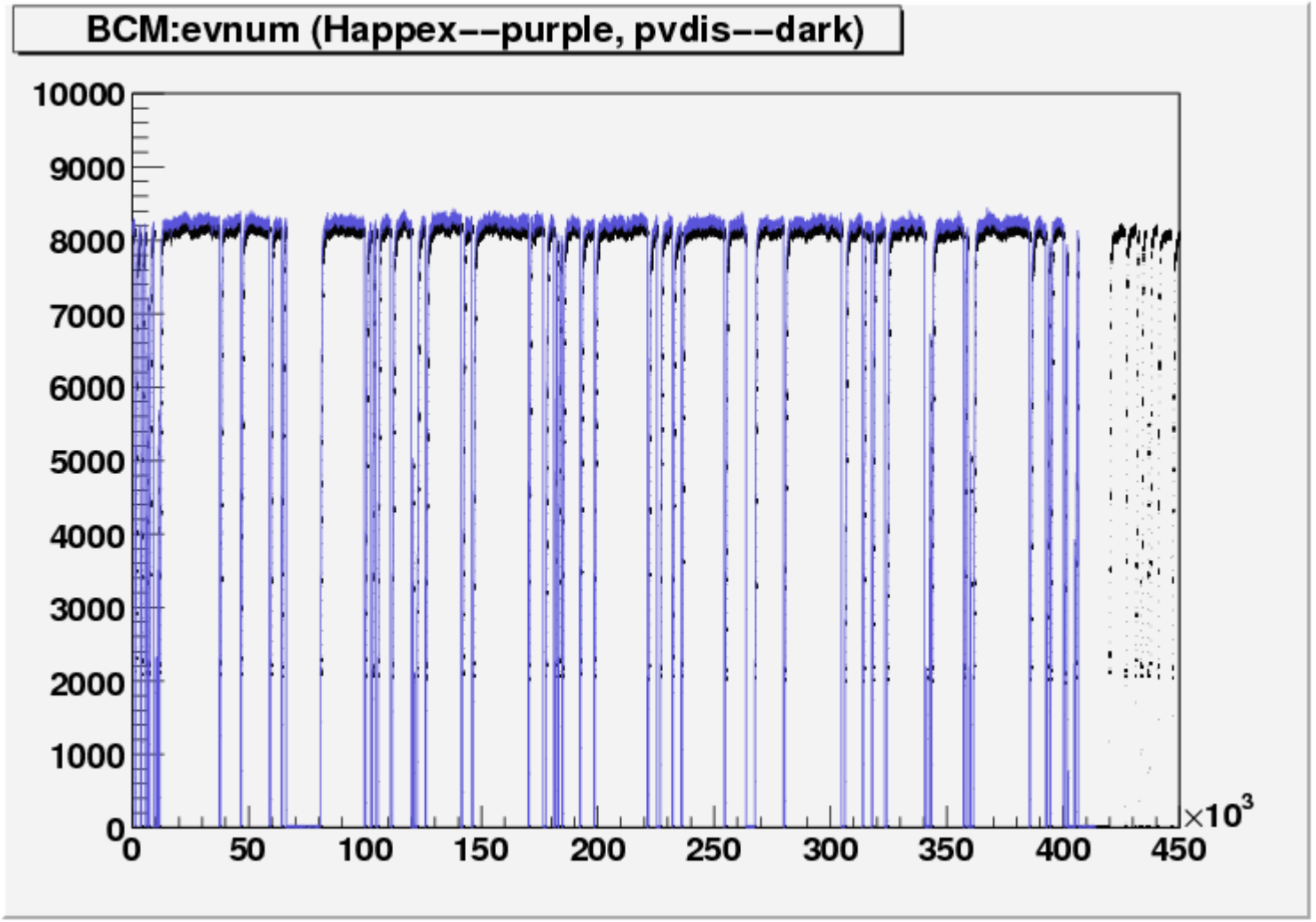


# Merging PVDIS with HAPPEX DAQ

## P-Tree

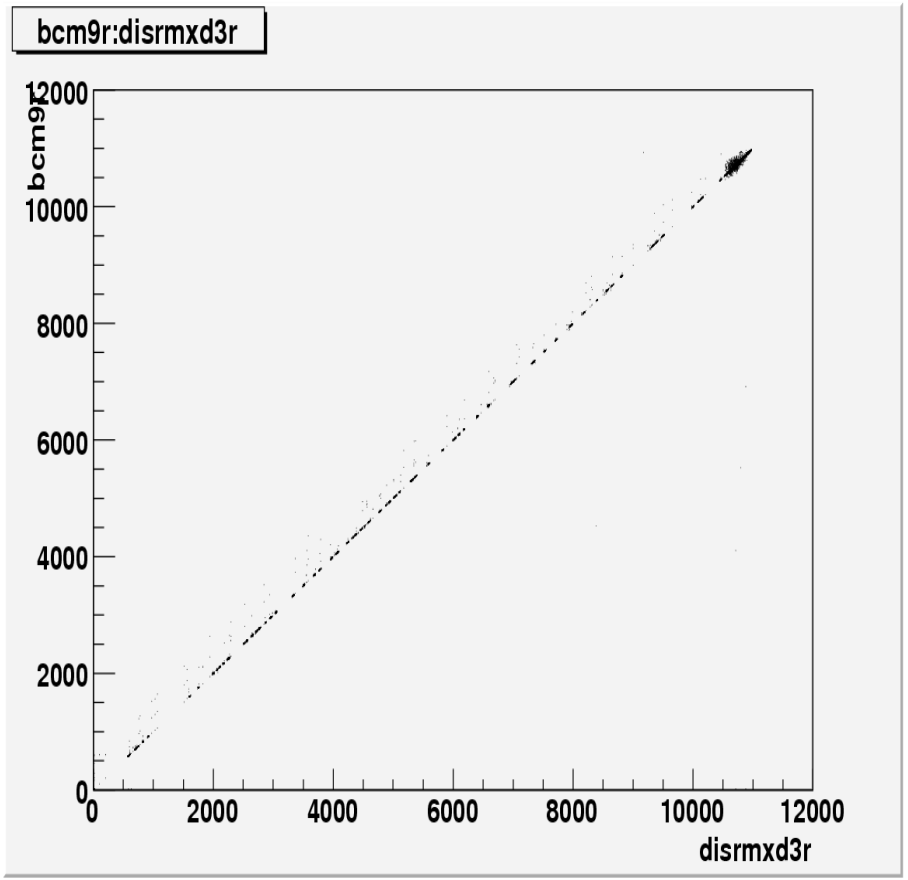
# Compare PVDIS and HAPPEX Scaler readings

Before integration, use a standalone code to read out PVDIS scalers and compare with HAPPEX



# Compare PVDIS and HAPPEX Scaler readings

Now, use PAN to read out and compare scalers in both DAQs




here, bcm9r is equal to scaler4_26, disrmxd3r = scaler7_26

| ev_num | helicity | bcm9r | v2f_clk4 | disrmxd3r | v2f_clk7 |
|---|---|---|---|---|---|
| 75 | 0 | 10917 | 1122 | 10918 | 3398 |
| 76 | 0 | 10918 | 1124 | 10918 | 3398 |
| 77 | 1 | 10914 | 1124 | 10918 | 3398 |
| 78 | 1 | 10925 | 1124 | 10924 | 3398 |
| 79 | 0 | 10918 | 1127 | 10924 | 3398 |
| 80 | 1 | 10912 | 1122 | 10924 | 3398 |
| 81 | 0 | 10906 | 1122 | 10907 | 3398 |
| 82 | 0 | 10907 | 1125 | 10907 | 3398 |
| 83 | 1 | 10907 | 1126 | 10907 | 3398 |
| 84 | 1 | 10909 | 1124 | 10909 | 3398 |
| 85 | 0 | 10909 | 1124 | 10909 | 3398 |
| 86 | 0 | 10909 | 1125 | 10909 | 3398 |
| 87 | 1 | 10907 | 1123 | 10906 | 3398 |
| 88 | 0 | 10913 | 1124 | 10906 | 3398 |
| 89 | 1 | 10911 | 1123 | 10906 | 3398 |
| 90 | 1 | 10915 | 1122 | 10915 | 3398 |
| 91 | 0 | 10909 | 1125 | 10915 | 3398 |
| 92 | 0 | 10913 | 1124 | 10915 | 3398 |
| 93 | 1 | 10914 | 1127 | 10914 | 3397 |
| 94 | 1 | 10922 | 1124 | 10914 | 3397 |
| 95 | 0 | 10909 | 1122 | 10914 | 3397 |
| 96 | 1 | 10902 | 1126 | 10902 | 3397 |
| 97 | 0 | 10900 | 1125 | 10902 | 3397 |
| 98 | 0 | 10902 | 1122 | 10902 | 3397 |
| 99 | 1 | 10890 | 1120 | 10891 | 3398 |

PROBLEM!!

# Compare PVDIS and HAPPEX Scaler readings

To try to repeat and solve the 3-same-reading problem, sent 100kHz pulser, Ramping DAC 12 after v2f into scalers of both DAQs

#31120

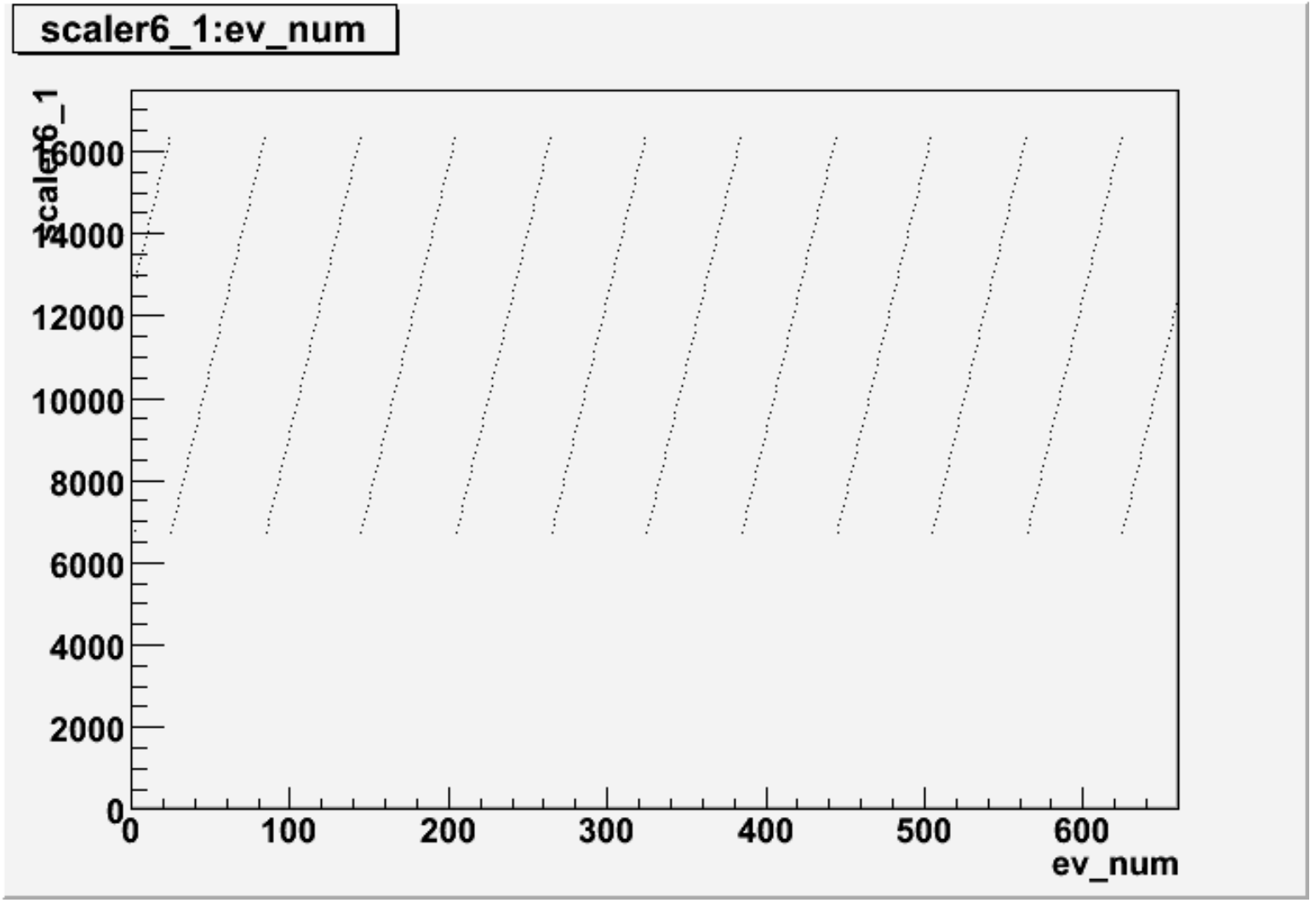
| ev_num | scaler4_0: | scaler6_0: | scaler7_0: | scaler8_0: | scaler9_0 |
|---|---|---|---|---|---|
| 1000 | 3386 | 3335 | 3335 | 3335 | 3335 |
| 1001 | 3384 | 3335 | 3335 | 3335 | 3335 |
| 1002 | 3386 | 3335 | 3335 | 3335 | 3335 |
| 1003 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1004 | 3384 | 3335 | 3335 | 3335 | 3335 |
| 1005 | 3386 | 3335 | 3335 | 3335 | 3335 |
| 1006 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1007 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1008 | 3385 | 3336 | 3336 | 3336 | 3336 |
| 1009 | 3385 | 3334 | 3334 | 3334 | 3334 |
| 1010 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1011 | 3385 | 3336 | 3336 | 3336 | 3336 |
| 1012 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1013 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1014 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1015 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1016 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1017 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1018 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1019 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1020 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1021 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1022 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1023 | 3385 | 3335 | 3335 | 3335 | 3335 |
| 1024 | 3386 | 3335 | 3335 | 3335 | 3335 |

100 kHz pulser

Scaler4 ungated

# Compare PVDIS and HAPPEX Scaler readings

To try to repeat and solve the 3-same-reading problem, sent 100kHz pulser, Ramping DAC 12 after v2f into scalers of both DAQs,



# Compare PVDIS and HAPPEX Scaler readings

To try to repeat and solve the 3-same-reading problem, sent 100kHz pulser, Ramping DAC 12 after v2f into scalers of both DAQs, helicity after v2f for synchronization check

#31185 ramping DAC 12 --->v2f chan1---> scaler4_1, scaler6_1, scaler7_1
helicity---> not OUT ---> v2f chan2---> scaler4_2, scaler6_2, scaler7_2

| ev_num: | scaler4_1: | scaler6_1: | scaler7_1: | scaler4_2: | scaler6_2: | scaler7_2 |
|---|---|---|---|---|---|---|
| 400 | 6841 | 6740 | 6841 | 15979 | 5868 | 5950 |
| 401 | 6841 | 6740 | 6841 | 16052 | 15809 | 16043 |
| 402 | 6840 | 6739 | 6840 | 5254 | 15815 | 16052 |
| 403 | 6841 | 6740 | 6841 | 5949 | 5106 | 5186 |
| 404 | 6841 | 6740 | 6841 | 15979 | 5871 | 5953 |
| 405 | 6841 | 6740 | 6841 | 16051 | 15810 | 16044 |
| 406 | 6840 | 6739 | 6840 | 5255 | 15814 | 16051 |
| 407 | 6841 | 6739 | 6841 | 15979 | 5105 | 5185 |
| 408 | 6841 | 6740 | 6841 | 5253 | 15815 | 16048 |
| 409 | 6841 | 6740 | 6841 | 5948 | 5104 | 5184 |
| 410 | 6840 | 6739 | 6840 | 15979 | 5871 | 5953 |
| 411 | 6841 | 6740 | 6841 | 5249 | 15809 | 16043 |
| 412 | 6841 | 6740 | 6841 | 15975 | 5100 | 5180 |
| 413 | 6841 | 6740 | 6841 | 16053 | 15813 | 16045 |
| 414 | 6841 | 6740 | 6841 | 5255 | 15815 | 16052 |
| 415 | 6840 | 6739 | 6840 | 15980 | 5106 | 5187 |
| 416 | 6841 | 6740 | 6841 | 5255 | 15817 | 16049 |
| 417 | 6841 | 6740 | 6841 | 5950 | 5106 | 5186 |
| 418 | 6841 | 6740 | 6841 | 15980 | 5872 | 5954 |
| 419 | 6841 | 6739 | 6840 | 16051 | 15809 | 16044 |
| 420 | 6840 | 6739 | 6841 | 5253 | 15815 | 16052 |
| 421 | 6841 | 6740 | 6841 | 5947 | 5103 | 5183 |
| 422 | 6841 | 6740 | 6841 | 15979 | 5869 | 5952 |
| 423 | 6841 | 6739 | 6840 | 5251 | 15810 | 16044 |
| 424 | 6840 | 6739 | 6841 | 15976 | 5101 | 5181 |

Scaler 6 gated

Scaler4,7 ungated

# Plans during the incoming experiments

1, Continue helicity synchronization check

2, Repeat the above check for every channel of all the scalers

3, Prepare the parasitic test during Ay and 3He(e,e'd) experiments