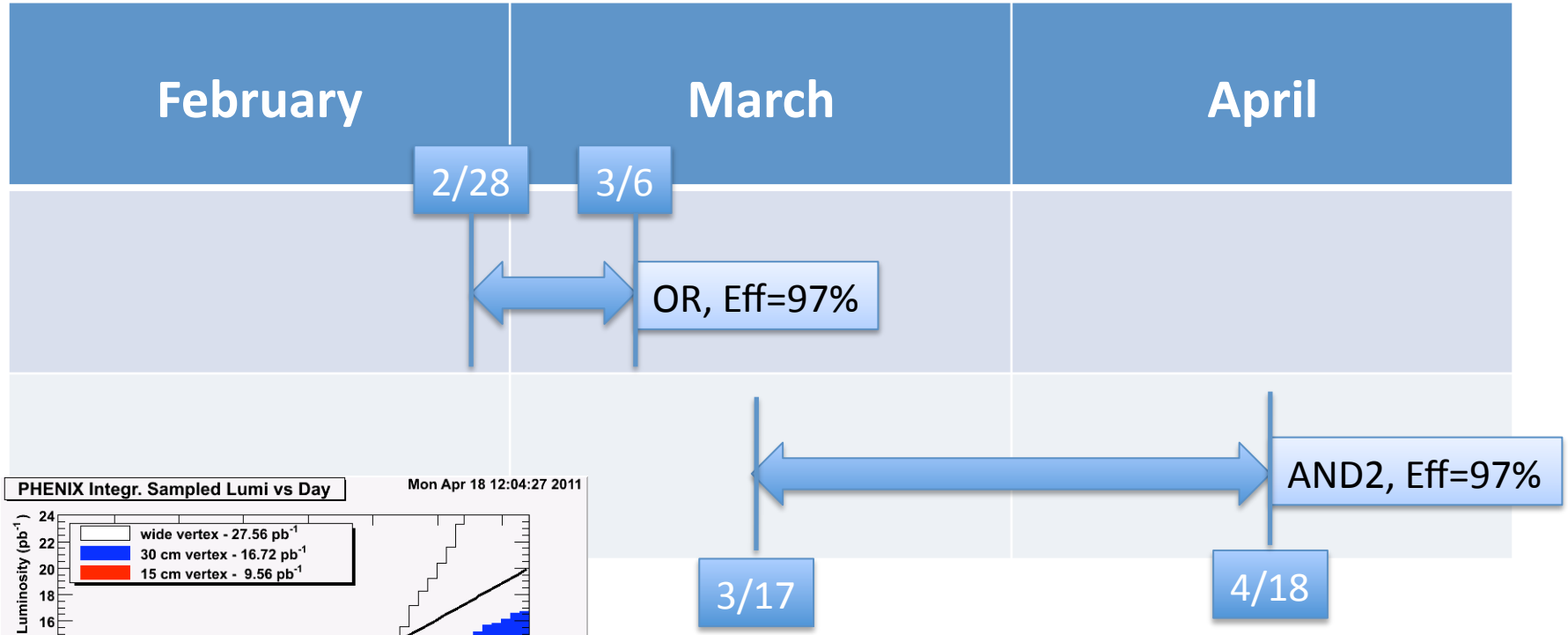
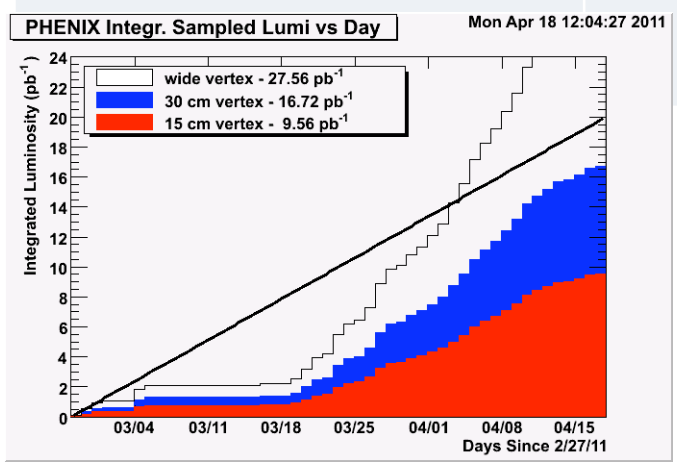
Run11 MuTrig Performance

RIKEN/RBRC
Itaru Nakagawa

MuTrig-FEE Operation

Feb.28, we started PHYISCS data taking w/ SG1xMUID1DxBBC(noVTX)

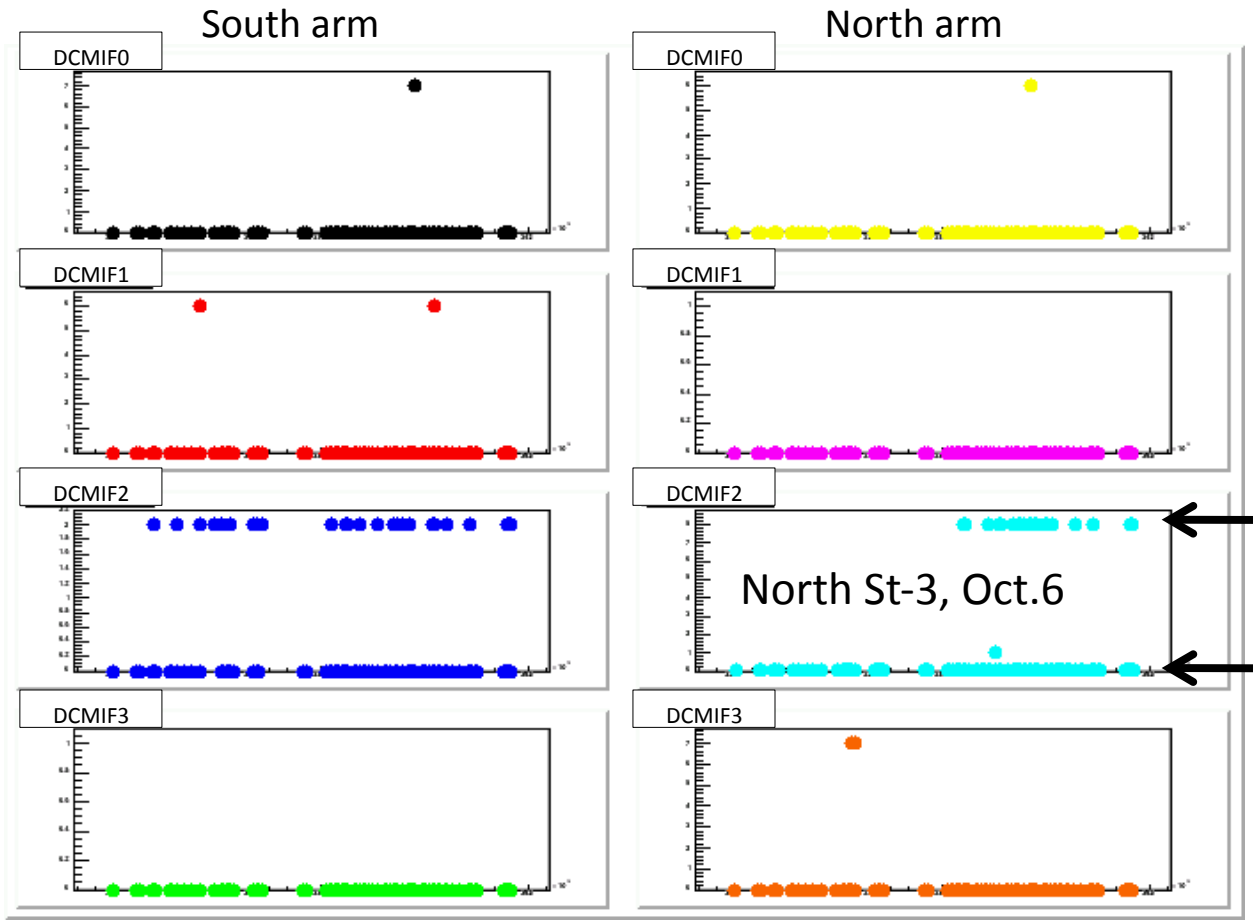




Thresholds are tuned to set efficiency~97% channel-by-channel.

Errors in Electronics

All “PHYSICS” data



developed by
K. Nakamura

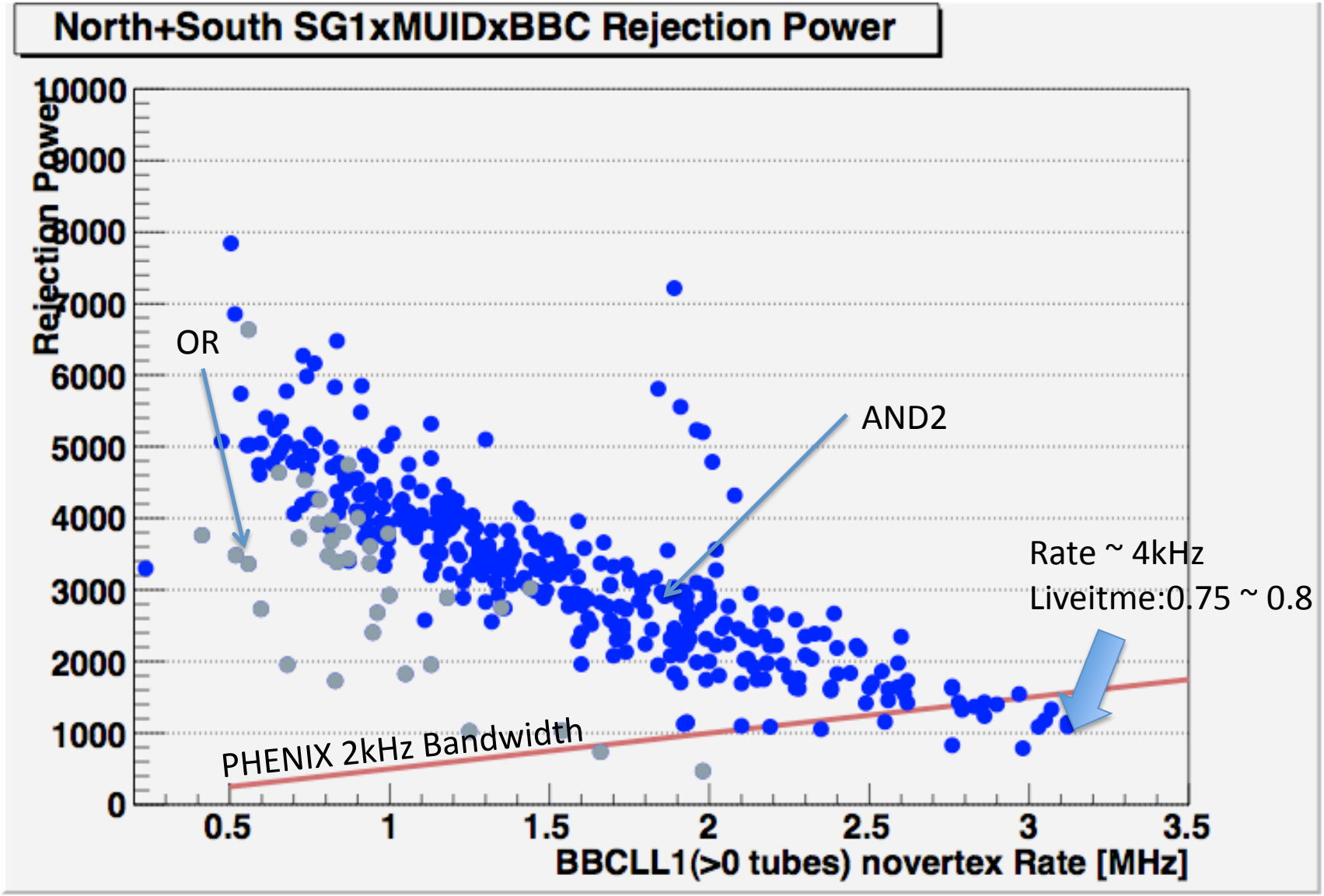
Y-axis: Channel

X-axis: Run numbers

Errors

OK!

✓ frequent failure especially for two ADTX boards


North+South SG1xMUIDxBBC Rejection Power
Rejection Power
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
0.5
1
1.5
2
2.5
3
3.5
BBCLL1(>0 tubes) novertex Rate [MHz]
OR
AND2
Rate ~ 4kHz
Liveitme:0.75 ~ 0.8
PHENIX 2kHz Bandwidth

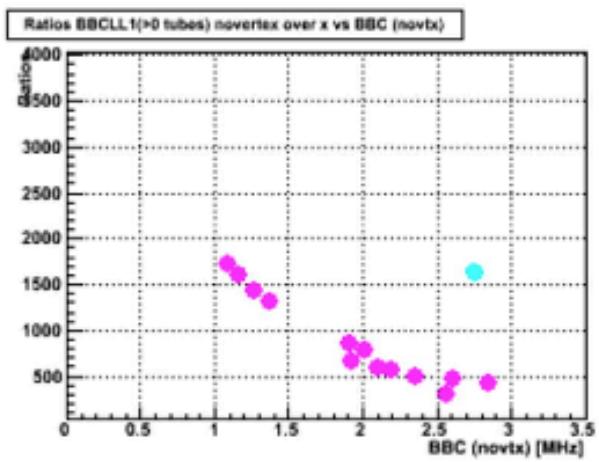
RPC Trigger Rejection

- From Martin Leitgab…

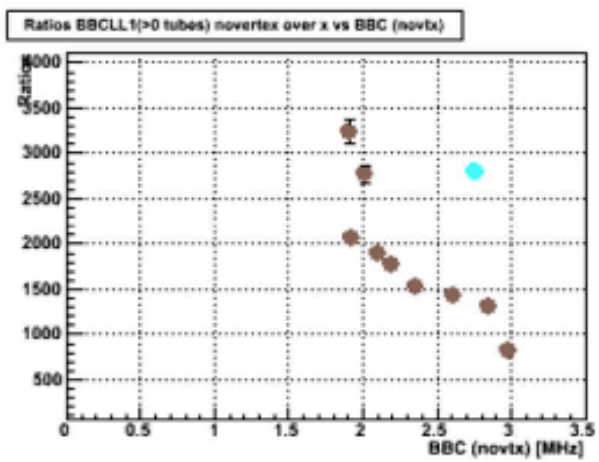
(RPCA||RPCB||RPCC) Trigger raw rate ratios to BBC no vtx : 'BBC/RPC'

- enabled on 04/12 (before BBC coincidence requirement).
- Tightening the trigger window gives ~ factor 2-3 at BBC 2.7 MHz.

(NRPCA||NRPCB||NRPCC)



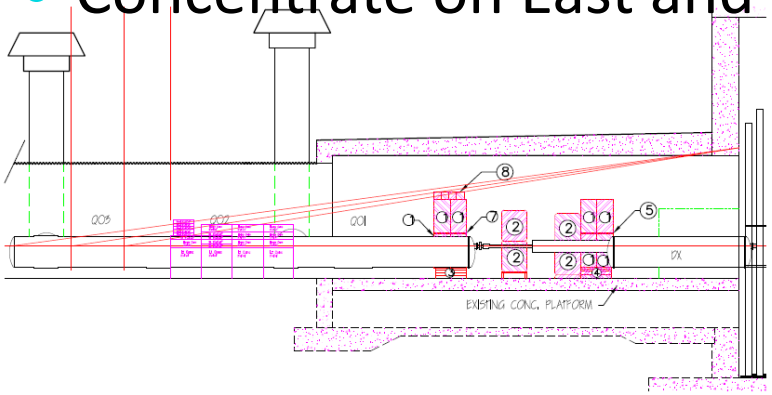
(SRPCA||SRPCB||SRPCC)

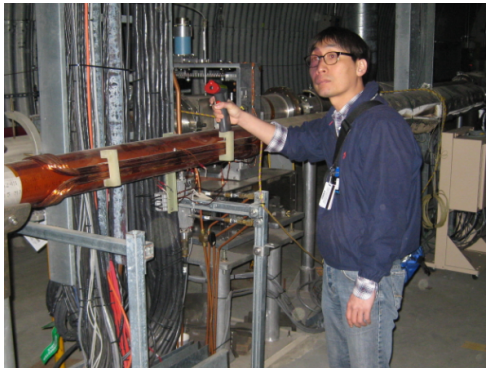


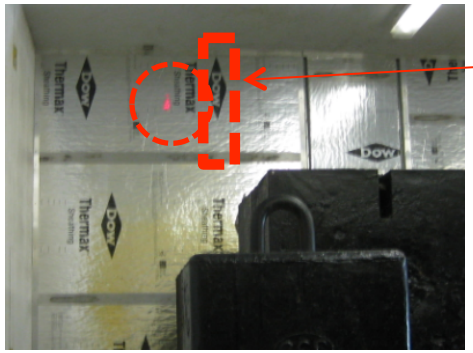
Tighter timing cut, Background shielding, better geometrical matching…

Next steps about incoming BG

- Shielding discussion this/next week with CAD to discuss plan for summer shutdown
- Origin of remaining BG not well understood
- Concentrate on East and Top

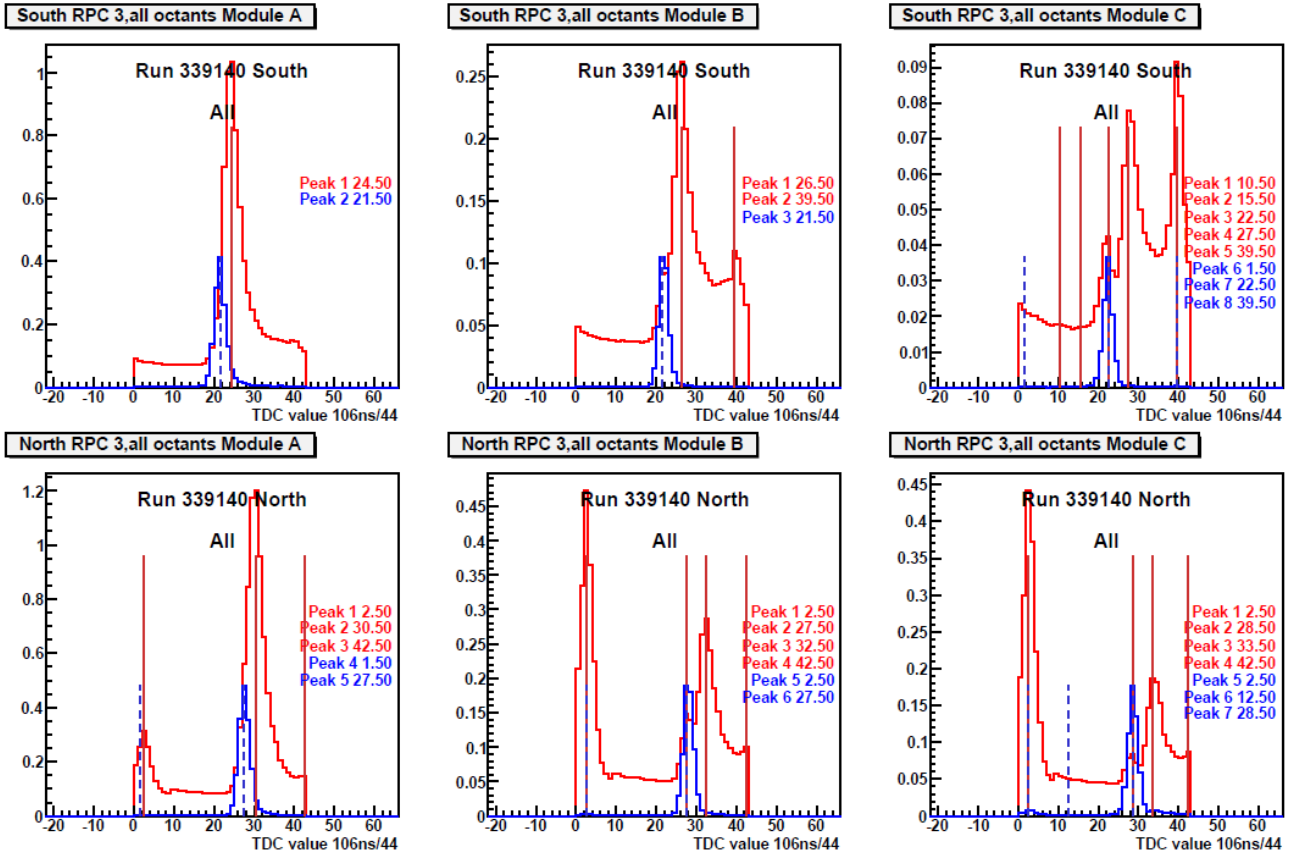






~S4 position

What about secondary BG?

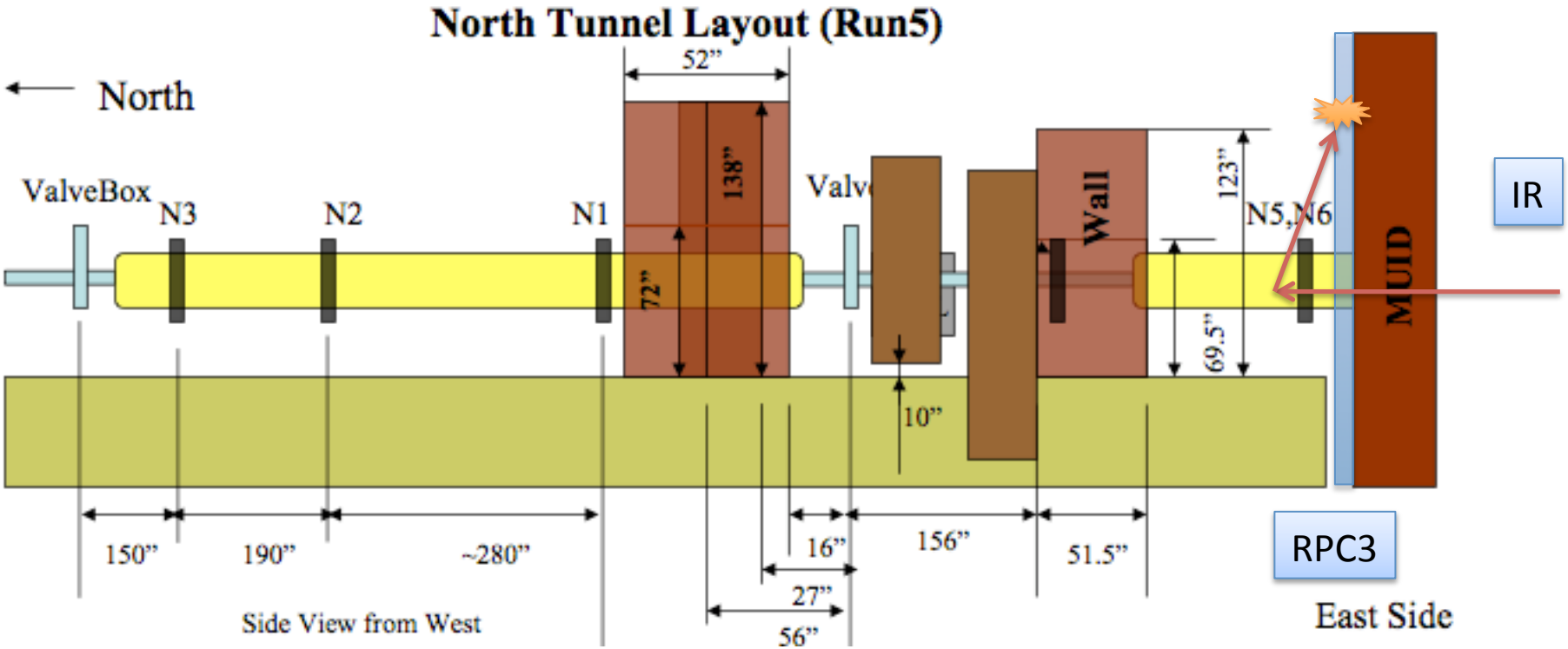


Also: uncorrelated BG high at high Luminosities →slow Neutrons?
→some PE plates in front of RPCs (tunnel side)??

- Secondary peaks dominant BG in A modules, also in others significant, close to collision timing → important for Trigger BG (Rejection)
- Can we do anything about it?

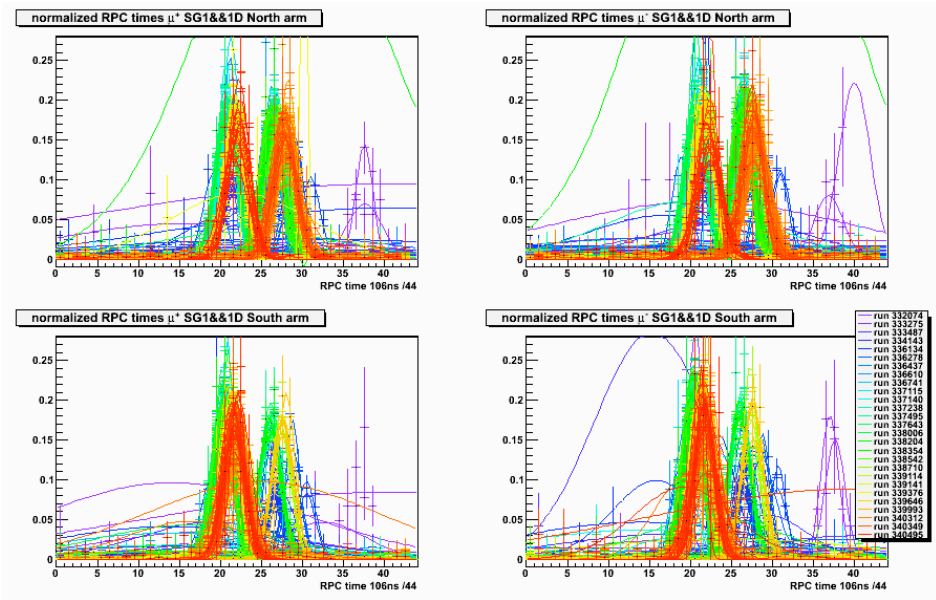
How can we test the origin of 2nd peak?

MUID ladder in retracted position?



RPC Shutdown Work

Timing Jitter ~13ns to be fixed.
(Chi and Martin)

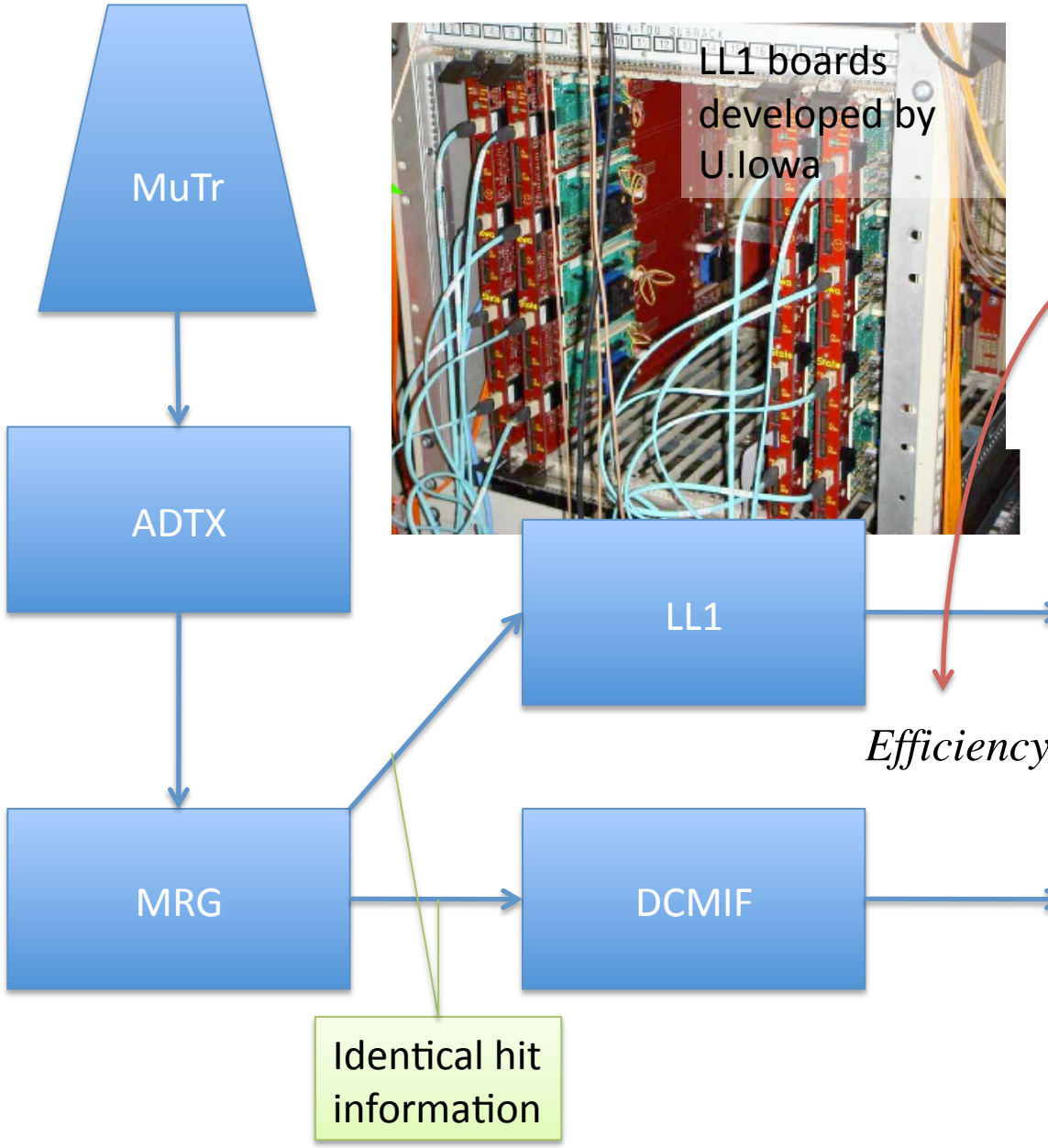


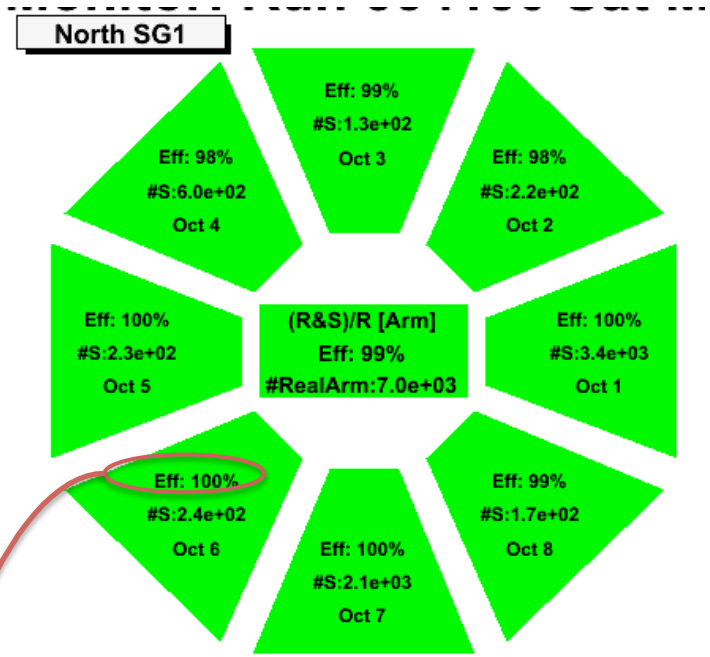
- During next shutdown
  - Recalibration of power supply at gas control unit
  - Debug two RPC gas gaps
  - Relocate gas distribution panel and redistribute gas lines
  - Redistribute HV lines (1 HV channel to 3 gas gaps → 1 HV channel to 2 gas gaps)
    - Need to fix some bad HV channels at HV supply modules
  - Shielding update at tunnels
  - Need a plan for RPC-1 gas distribution panel and HV distribution

- Need to decrease usage of gas (Goal: maximum 5 liter/min for RPC-3+RPC-1)

backups

LL1 Efficiencies

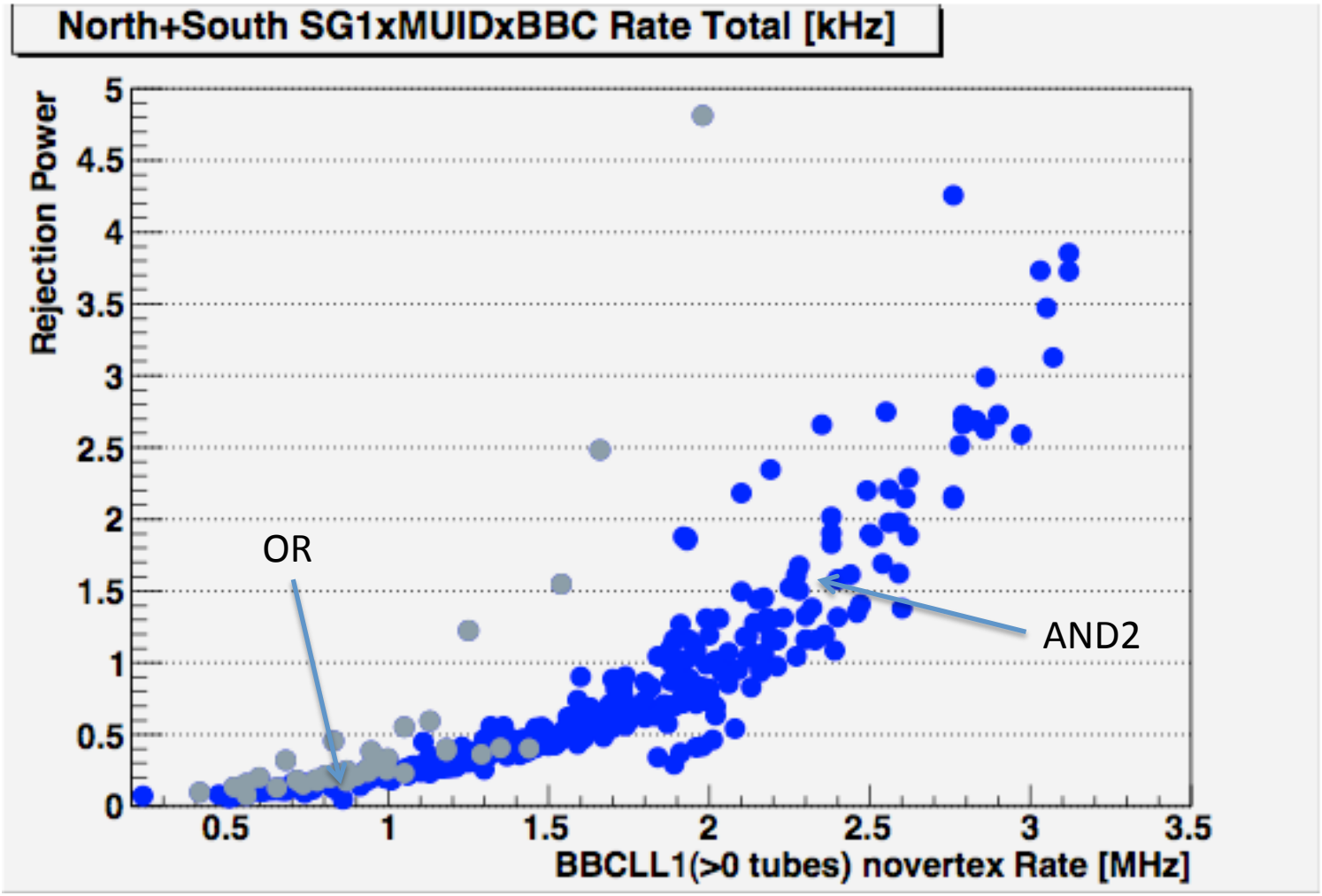




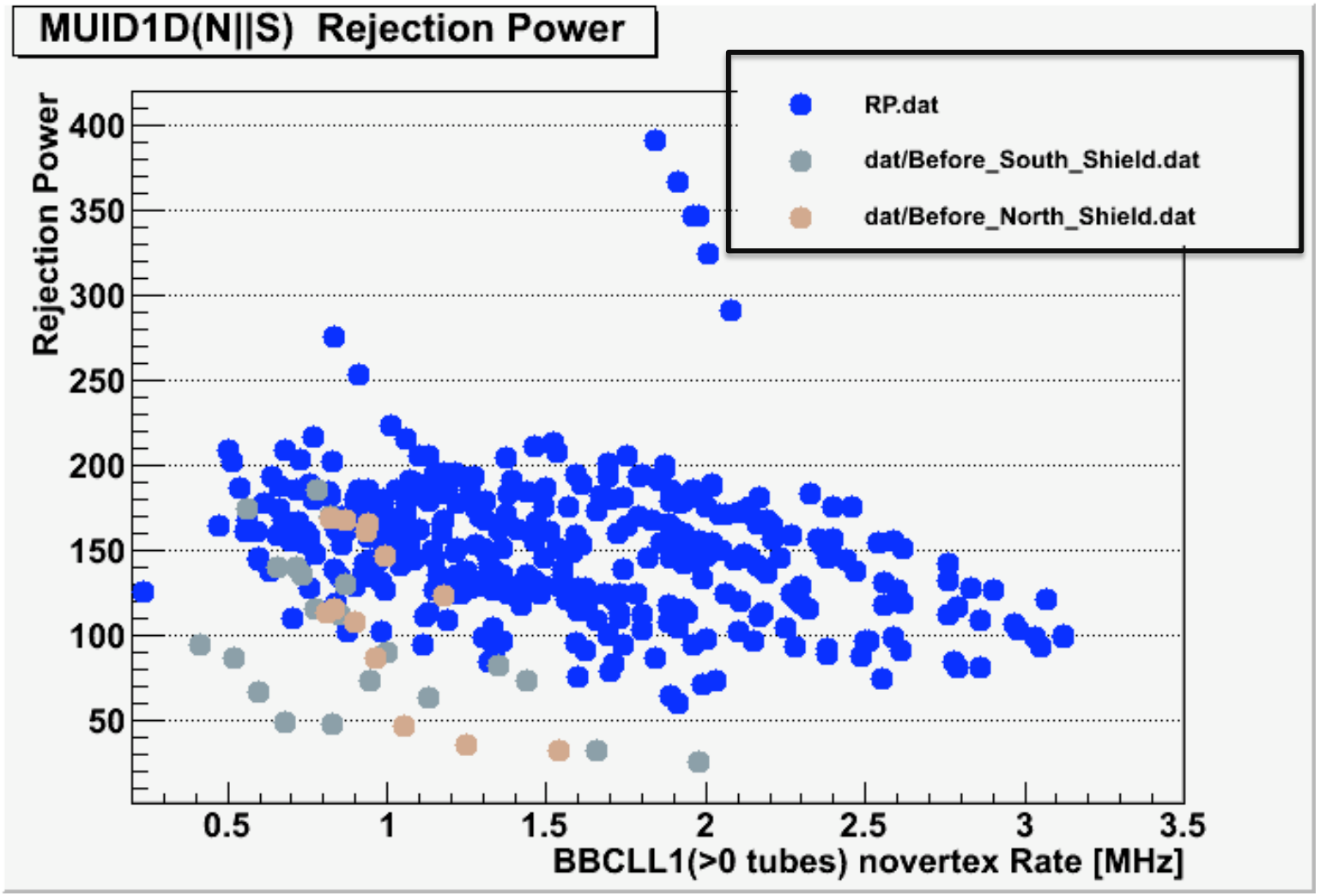
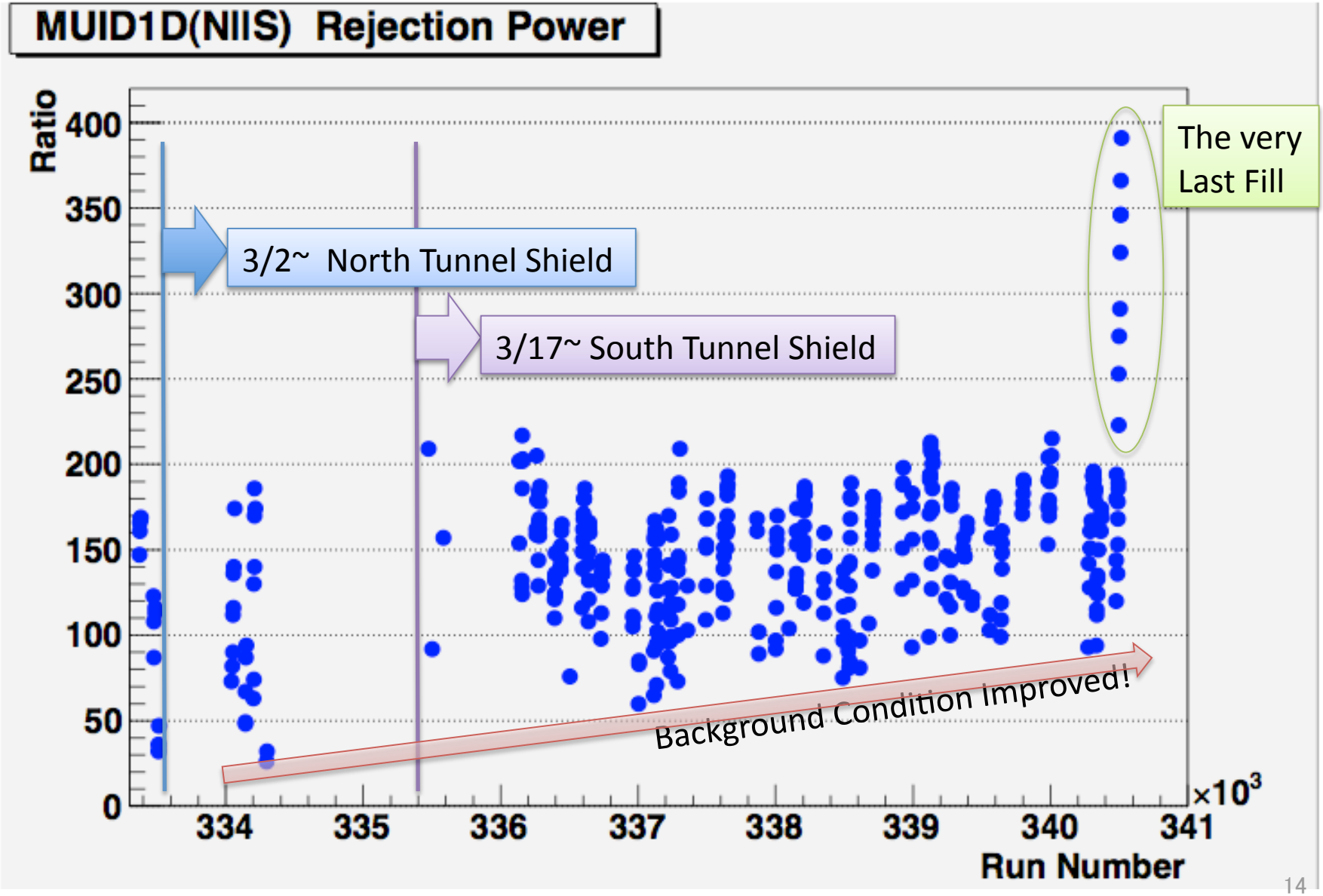
Josh Perry's Online Monitor

$$Efficiency = \frac{\#\ hits\ processed\ thru\ LL1}{\#\ hits\ processed\ thru\ DCMIF}$$

SG1 Raw Trigger Rates



MUID Rejection Performance



MUID Rejection Power