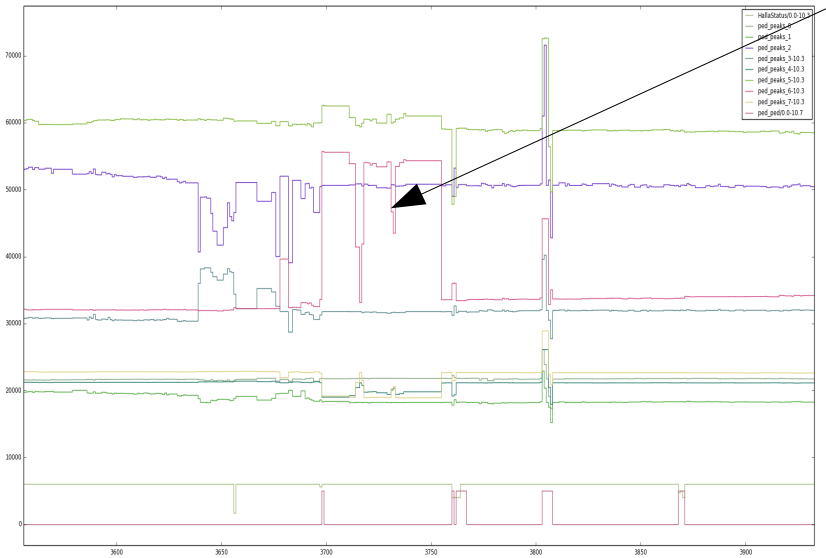
BPM status

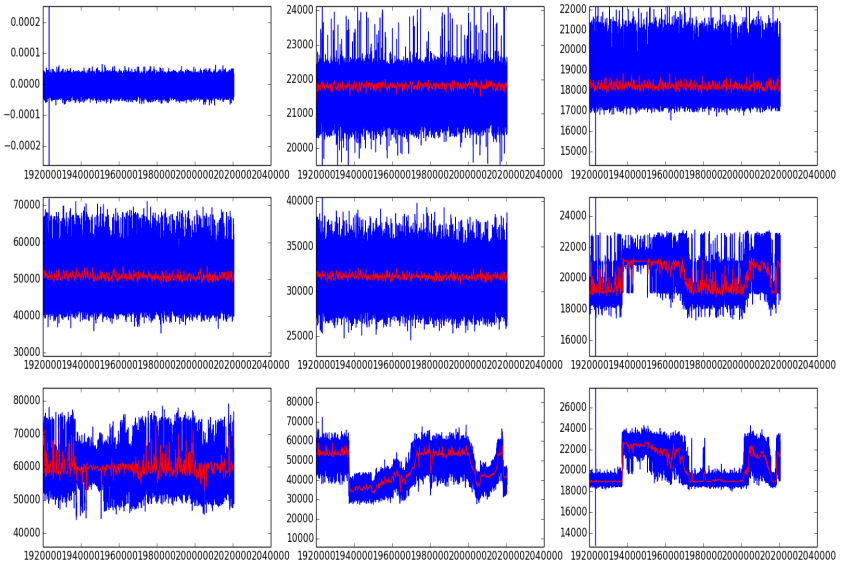
Pengjia Zhu

Continue the problem last time

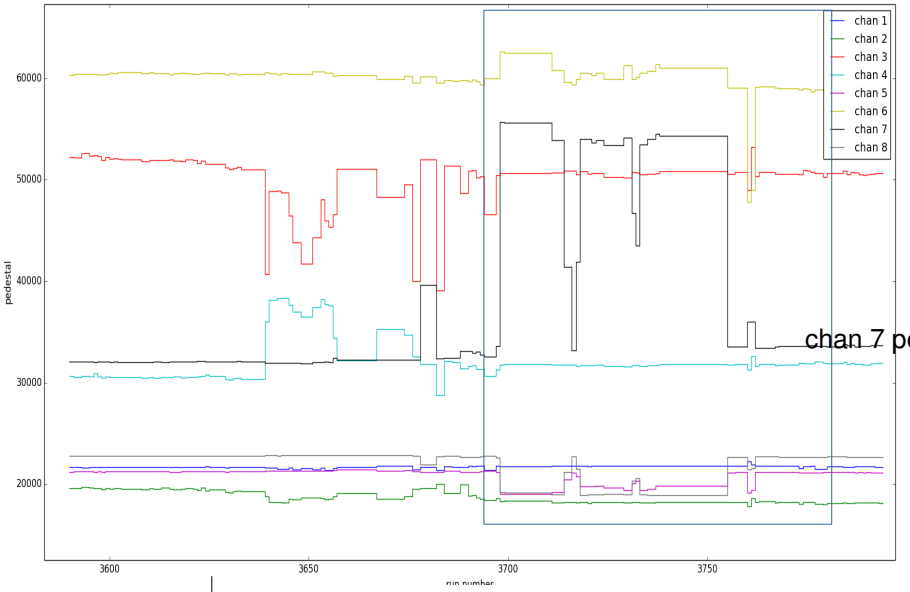
Pedestal fluctuating in 3639~3755 run range (eight channels)



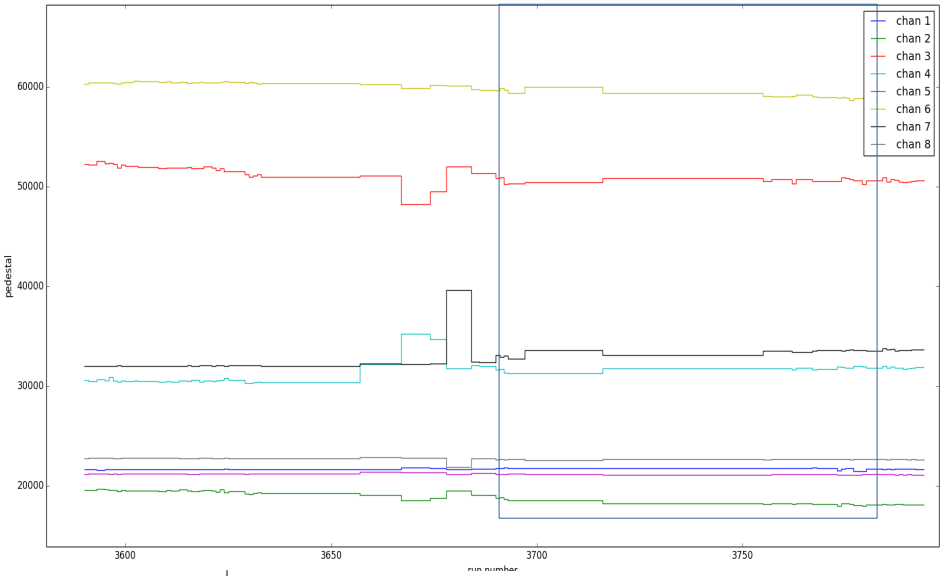
Run 3731:
Production run
At the end of run, when beam is gone



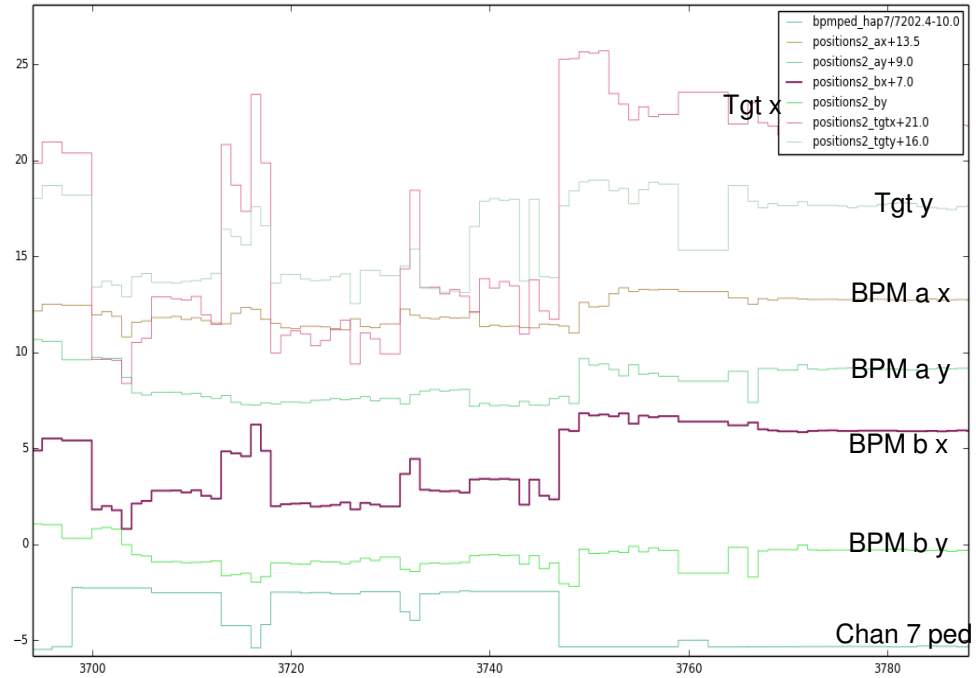
If ignore the pedestal fluctuation(let's focas on 3607~3786, in blue box range)



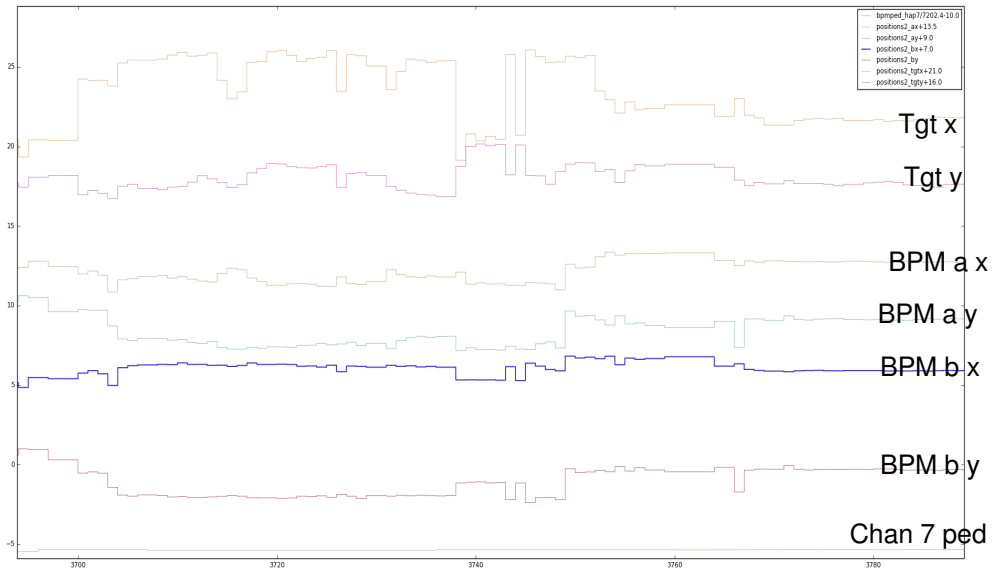
chan 7 ped



Position calculated

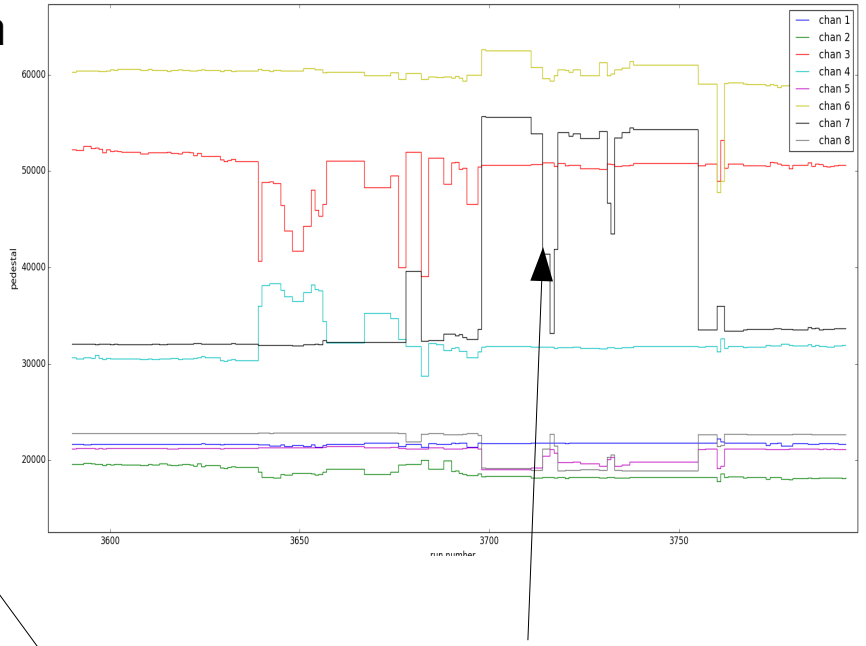


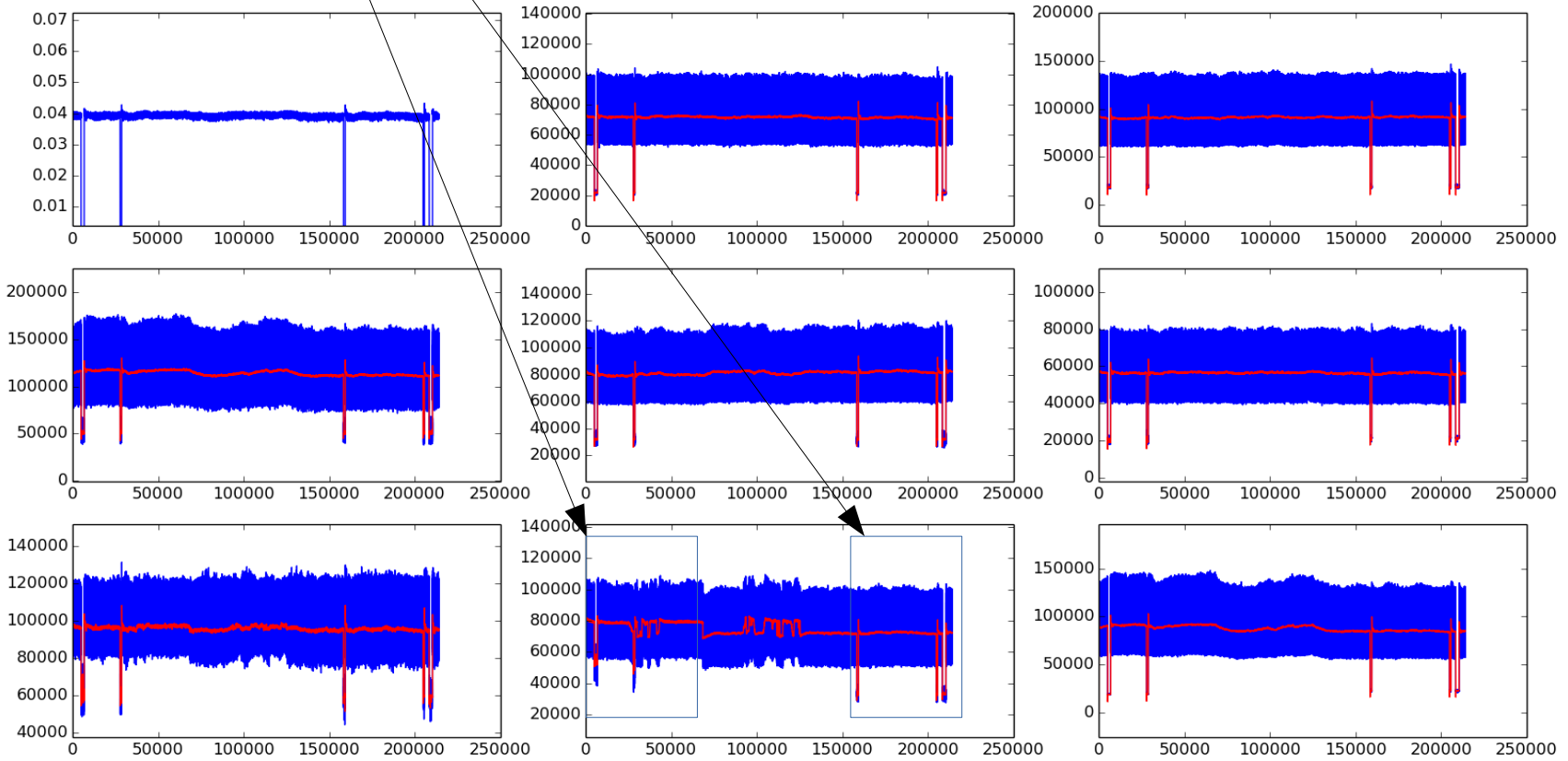
Position calculated
chan 7 will affect bpm b x

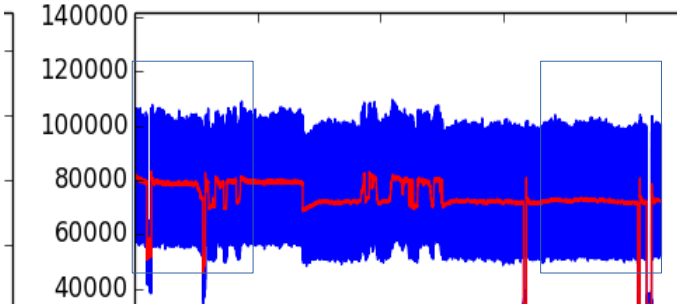


If take a look at a single run

Run 3714
Production run
Ped in first quarter is
52510 for chan 7
Ped in last quarter is
33190 for chan 7







If use pedestal for their own:
First quarter use first quarter's ped
Last quarter use last quarter's ped

First quarter:
bpm a(x,y/mm):
-1.36 -1.51
bpm b:-3.48 -1.35
tgt: -6.44 -2.05

last quarter:
bpm a:-1.86 -1.39
bpm b:-0.41 -2.33
tgt: 5.99 1.66

If both use pedestal in last quarter:
(use same pedestal value)

First quarter:
bpm a:-1.36 -1.51
bpm b:0.20 -2.37
tgt: 6.75 2.04

last quarter:
bpm a:-1.86 -1.39
bpm b:-0.41 -2.33
tgt: 5.99 1.66

Possible explanation

The pedestal fluctuation for this period came from the source after BPM receiver's amplifier but before ADC
One of the calibration constant “b” change with the pedestal

$$\phi = f(A_+ - A_{0+}) = a(A_+ - A_{+0} + b)$$

Signal

Pedestsal readout
From ADC

Status for whole periods of experiment:

Calibrated most of periods that covered almost all of the production, optics, dilution, packing flaction runs for both arms

Checked all of the suspicious period, explained most of them

The calculation of uncertainty is continuing , will be finished soon

The technote will be out soon

All of the bpm calibration work will be finished in this month if I'm lucky and with high efficiency

backup

Cutted all of events that have beam for run 3714