Vernier scans RHIC run22

Horizontal/DPP
Mean=0.01, Width=0.20, Luminosity=1.35e+32, XSection=2.51e-27

Vertical/DPN
Mean=-0.00, Width=0.19
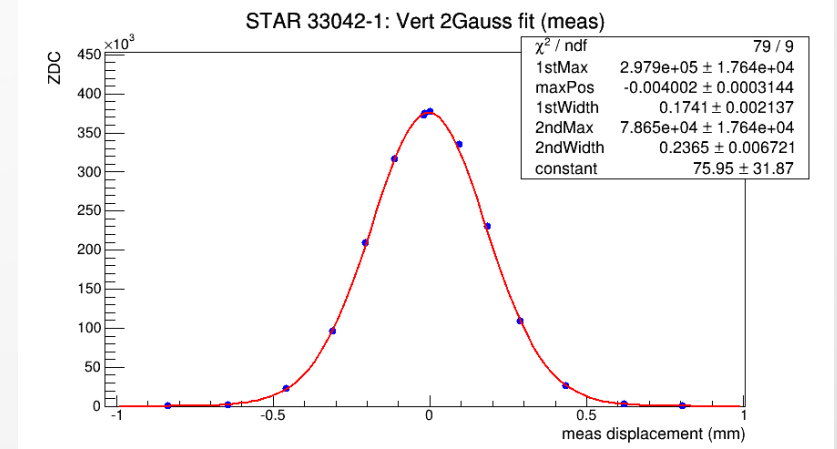
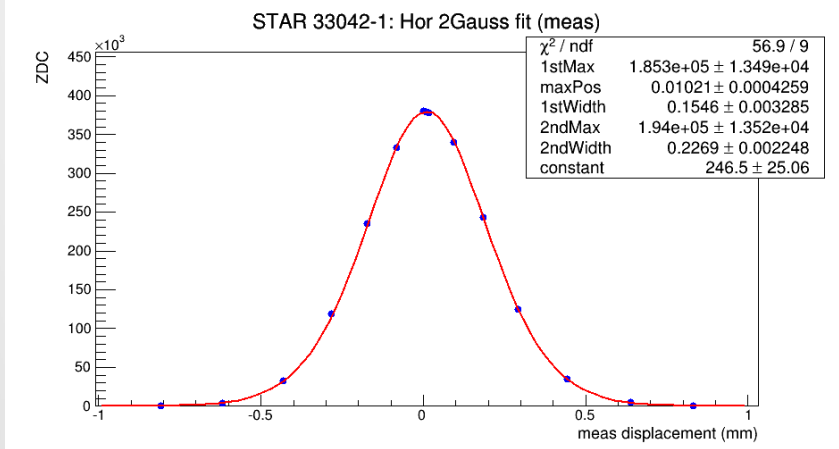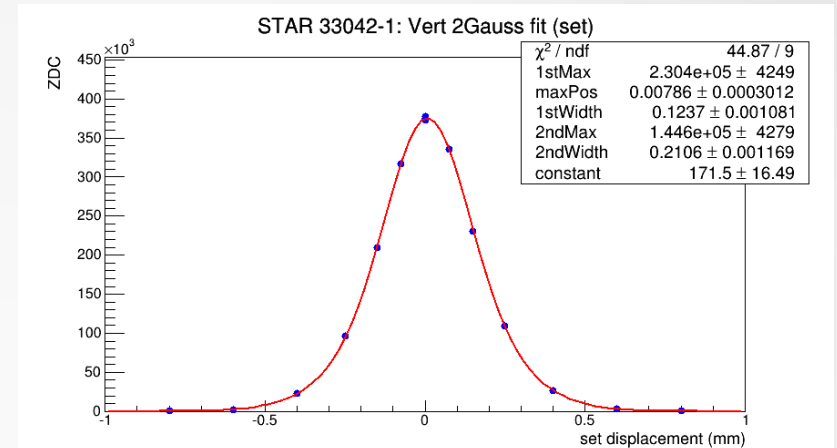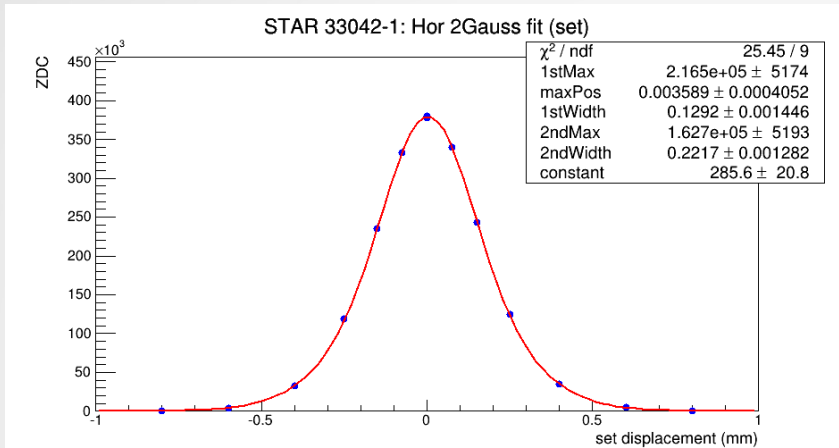## Online ("lisa"):
No singles correction
Only 1G fit
Using model "bump"

Offline:
Singles correction
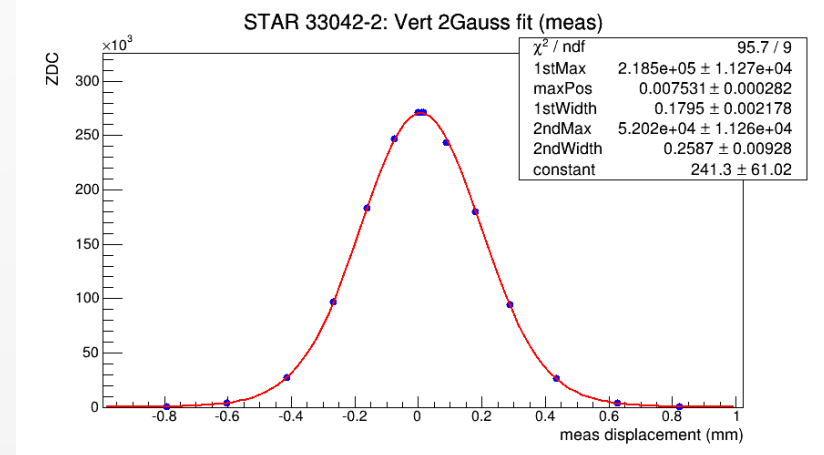2G or 2G+const fit
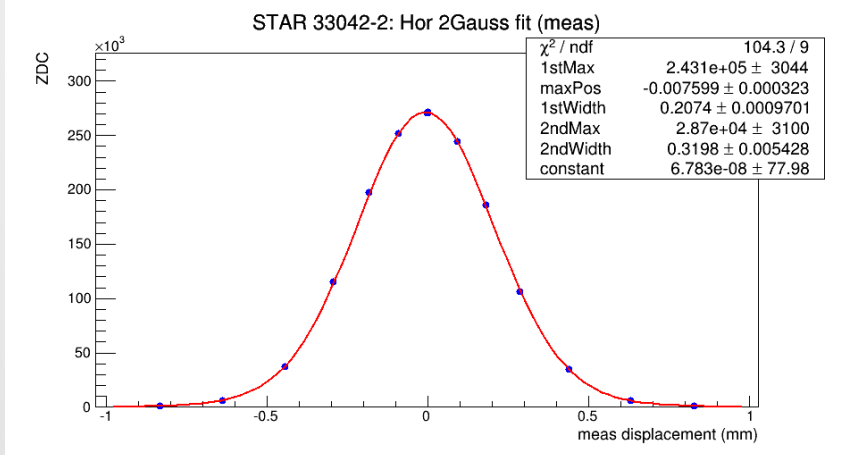Model or BPM
Moving ring only
Both rings

Total of 14 scans
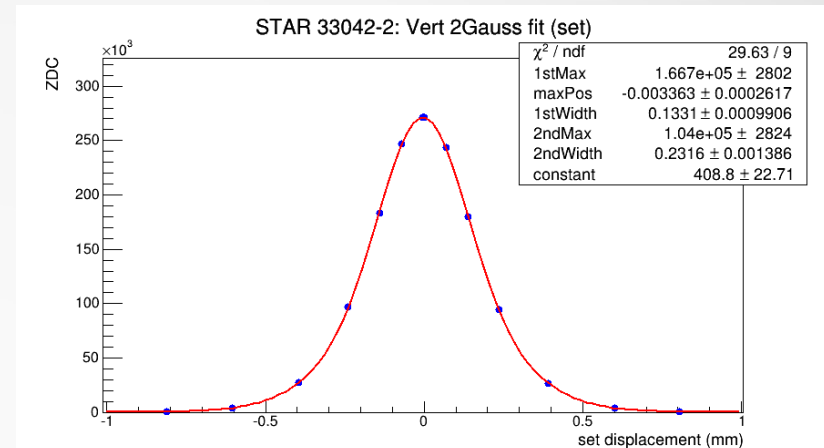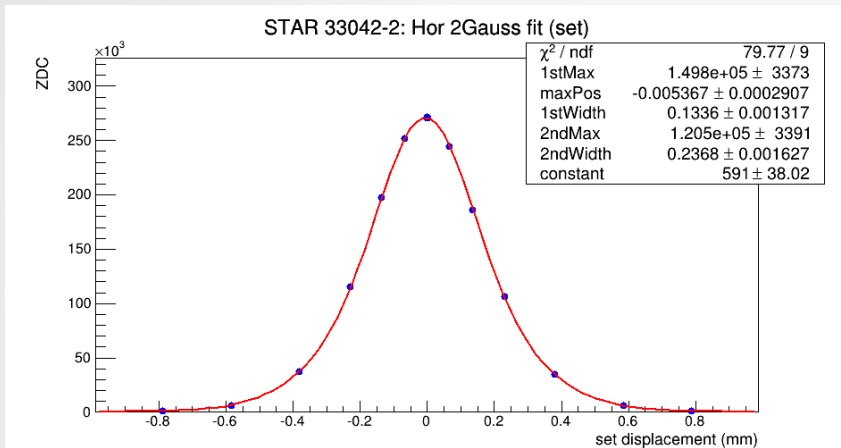High and low intensity
28-111 bunches
Gain x1 and x10
Blue and Yellow
3 different ramps

33042 #1, 111x111 beta* 1.2 m, Y

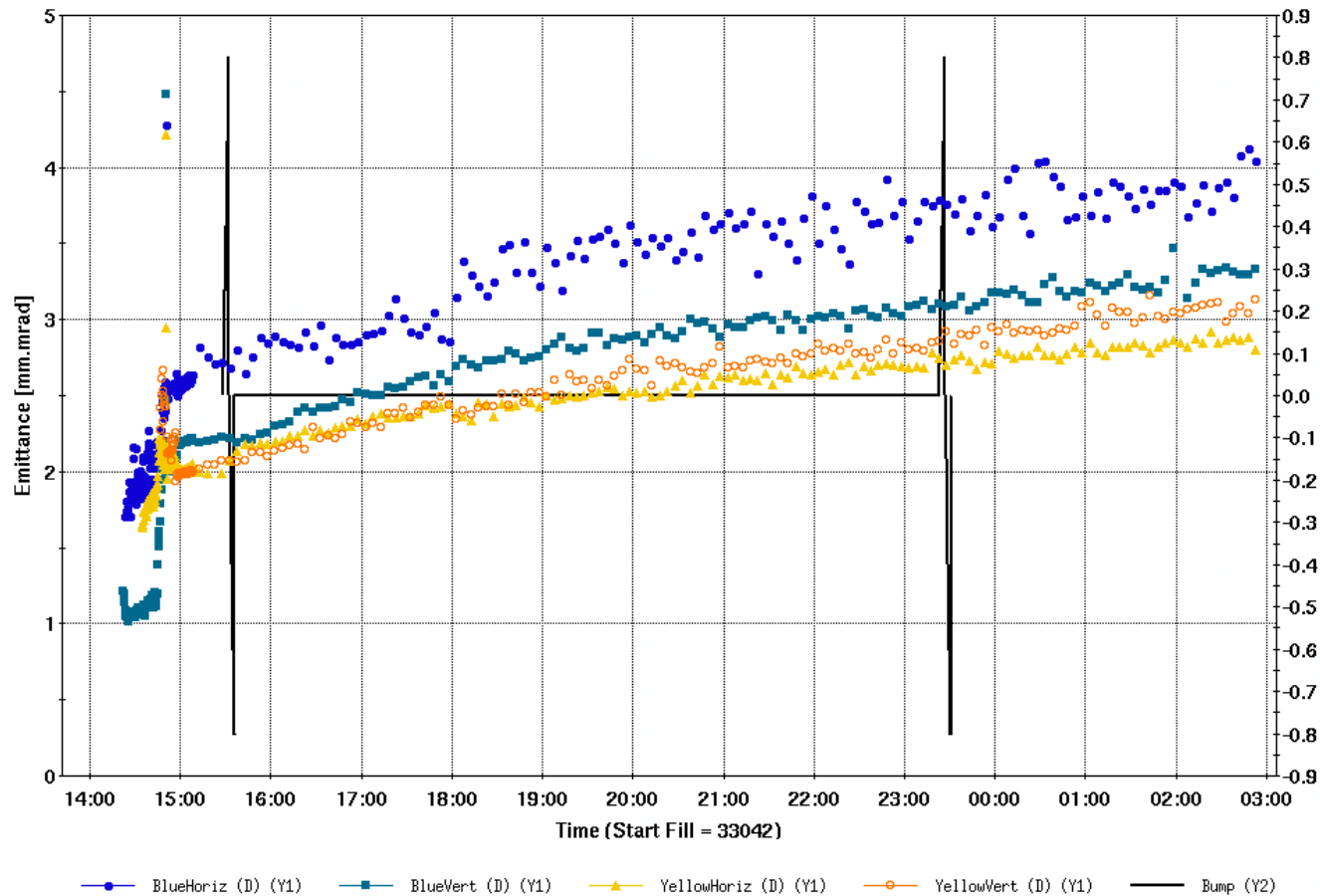

Model (set) fits typically have better chi^2

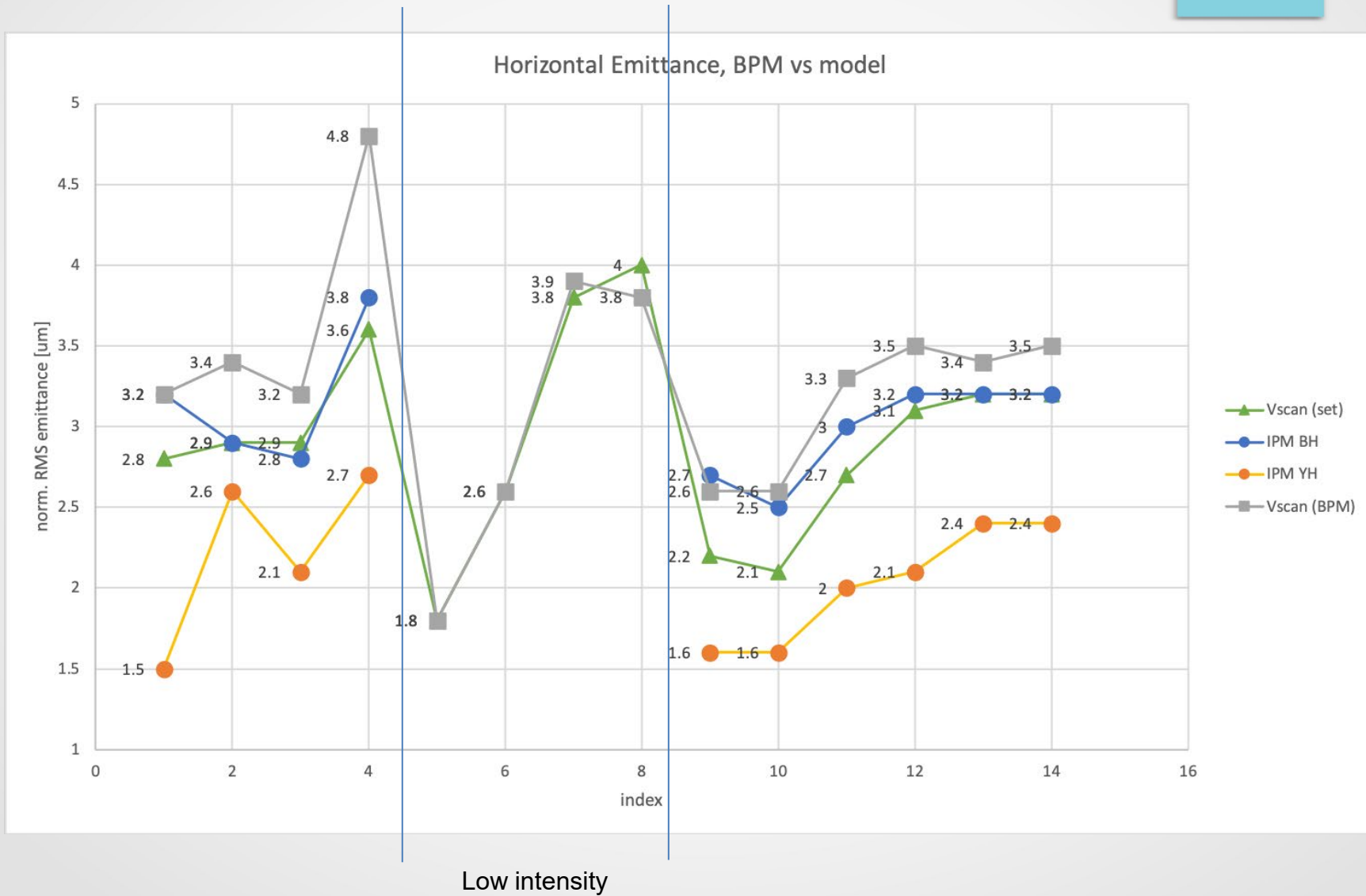# 33042 #2, 111x111, beta* 1.0 m, Y

Discrepancy between model and set is evident regardless of rampfile

Comparison vscan with IPM emittance

IPM scatter is rather large
Blue is typically larger than yellow
Expect vscan results between blue and yellow

IPM and vscan (Hor)

Horizontal Emittance, BPM vs model

Beam-beam or electronic cross talk?

Low intensity: likely
electronic cross talk
High intensity: Beam-beam
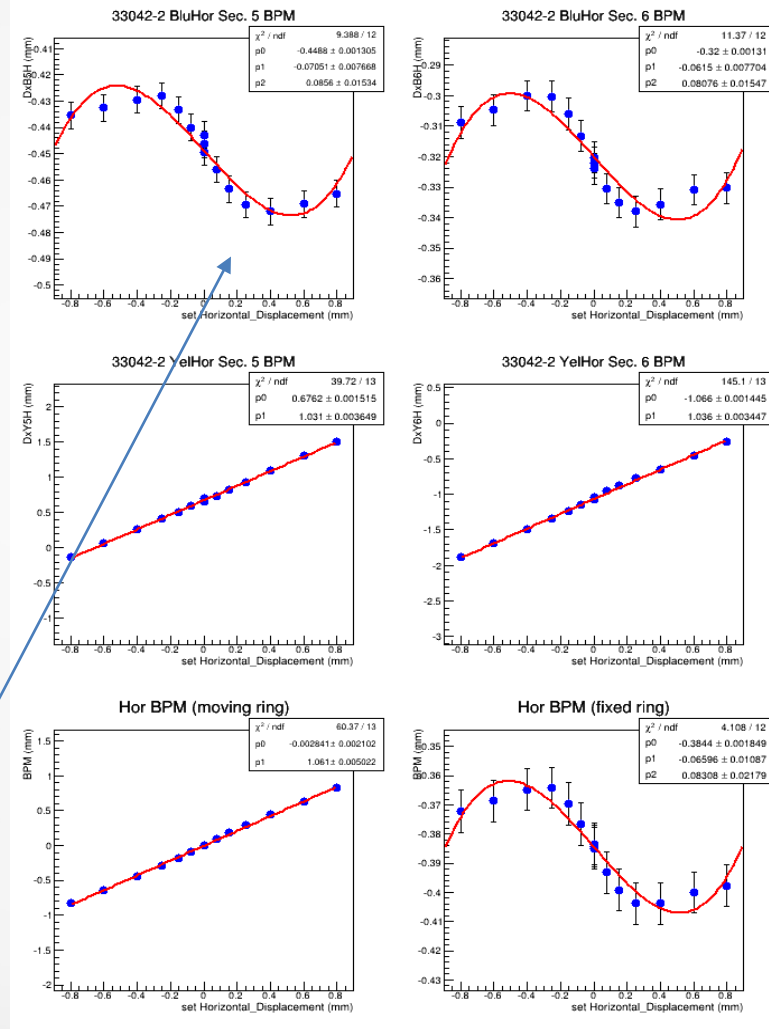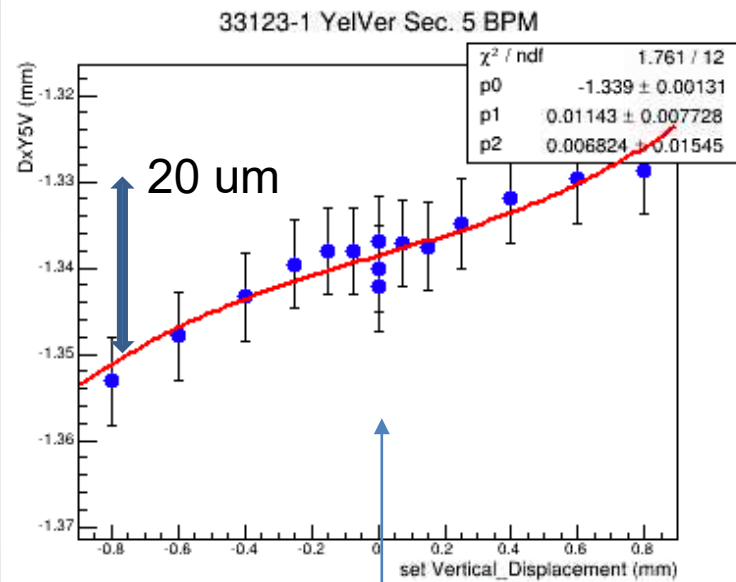
fixed

moving

Combine
east&west

ZDC effective cross section pp22-255GeV
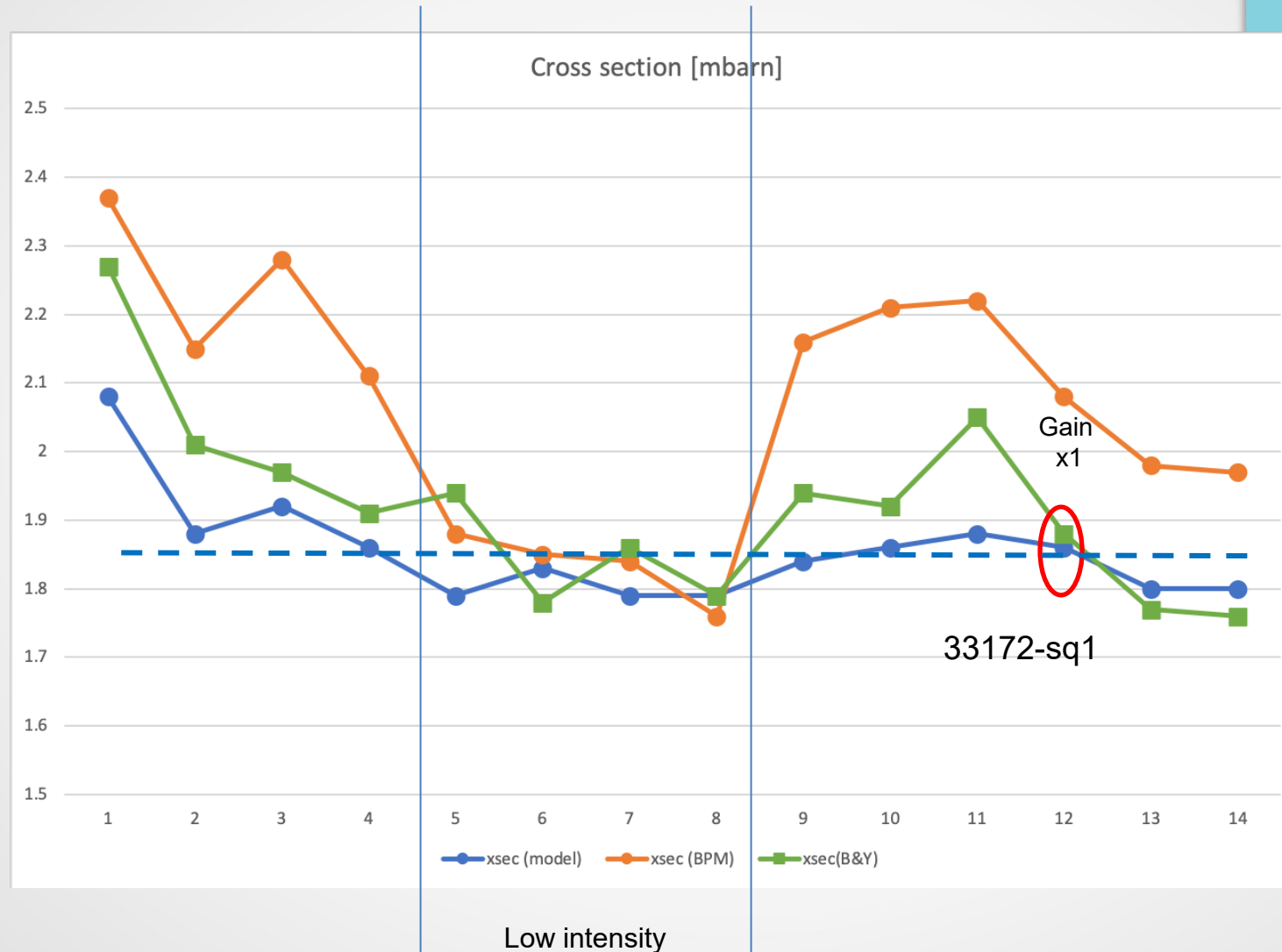
Cross section should be constant regardless of beam conditions

summary

Cross section should be constant:
Only using "set" values satisfies this 'rule'

Compare with independent measurement (IPM):
"set" values give best agreement with IPM
Rampfile does not appear to matter

Low intensity stores:
No apparent beam-beam
"set" and BPM agree within 5%
Using both rings more 'random'

BPM vs "set" consistent with beam-beam
Intensity dependent
Electronic cross talk and beam-beam evident

Using both rings AND correct gain gives best agreement also for high intensity stores (need to work on understanding gain calibration)

Conclude:
Keep using "set" values
Avg. of 1.86 mbarn