AGS Polarization Update 18Mar03 Lahrens

(What a group both the CAD acc physics spinners and the CNI gang!)

Where are we?

0) taking the source for granted, stable, >70% polarization and plenty of intensity (>1.5e11 at AGS extraction achieved early on).

1) The "dead-reckoned" i.e. without using polarization (except the Booster measured at AGS injection) gave 20% at the RHIC injection field of ggam=46.5.

Involves predicting the timing of the rf dipole excitations, setting up the tune and chromaticity at each of these looking at the beam, flattening the AGS orbit (8th and 9th harmonics), setting up the snake to its nominal 5% strength, tuning the transverse emittances as small as possible.

2) 1.5 weeks of "tuning" has raised the polarization at 46.5 to about 40%.

pics: a) available time
b) rf dipole timing 12+ easy, 36+ hard; dead reckoned timing ok.
c)beam size (IPM)
vert 10pi -> 15pi (mmmr) normalized emittance
hori 20pi -> 30pi

d) snake strength optimization. (to seriously consider doing this due to the speed of the CNI)

e) rf dipole setups
drive amp and tune separation (beam vs the drive frequency)

3) Plans:

a) multiple bunches in AGS, for CNI "up the ramp" commissioning.

b) parallel development of other AGS setups (ggam = 12.5 magnetic porch etc.)
(possible now that RHIC AU-d is in final configuration)

c) lots of parameters yet to scan. Where do we lose the polarization? And then, can we get it back?

Netscape: Graphic

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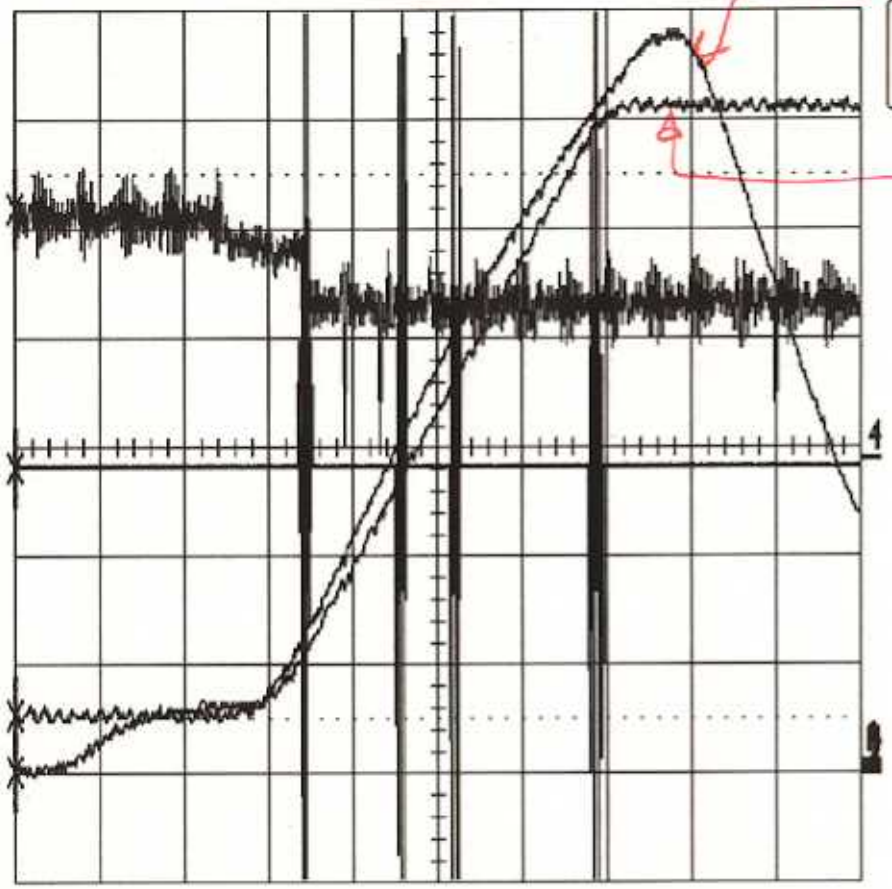
16-Mar-03
19:12:48

REMOTE ENABLE

GO TO
LOCAL



2
.1 s
1.00 V
0 mV

1
.1 s
200 mV
0 mV

A: a*3+b=====
.1 s
1.00 V
0.00 V

4
.1 s
5.0 V
0.00 V

.1 s

← 1.00 s

1 .2 V DC
2 1 V DC
3 2 V DC
4 5 V DC

Δt 0.0 ms 1/Δt ∞

Ext10 DC 0.85 V 1MΩ

50 kS/s
SLOW TRIGGER
NORMAL

Close Duplicate

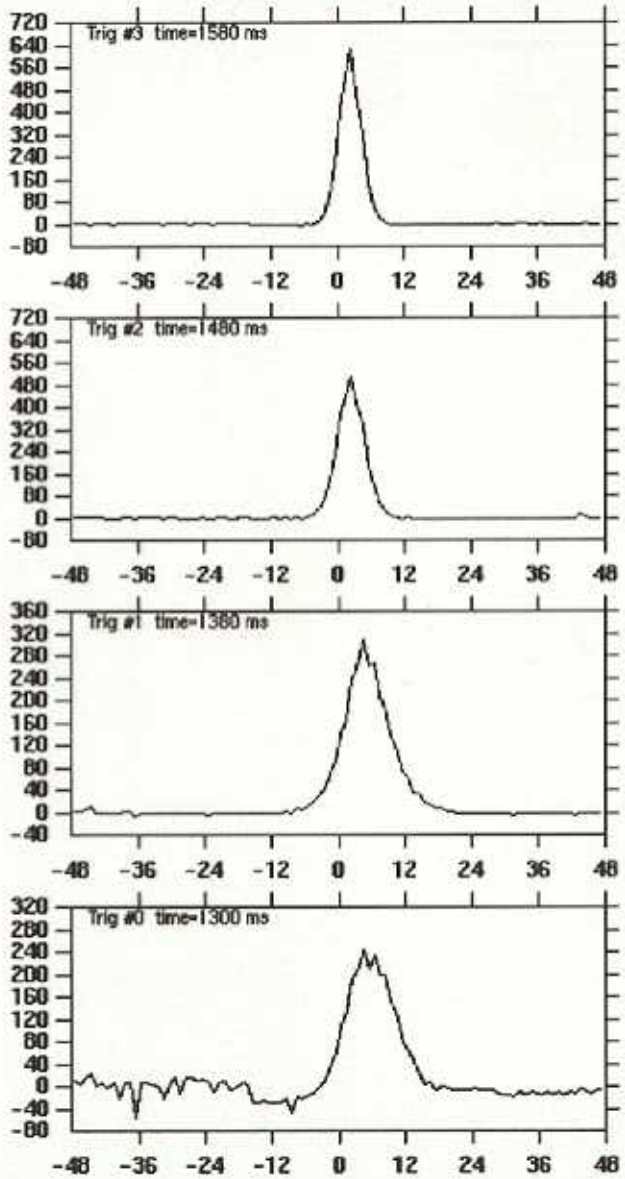
Connect: Host www.cadops.bnl.gov contacted. Waiting for reply...

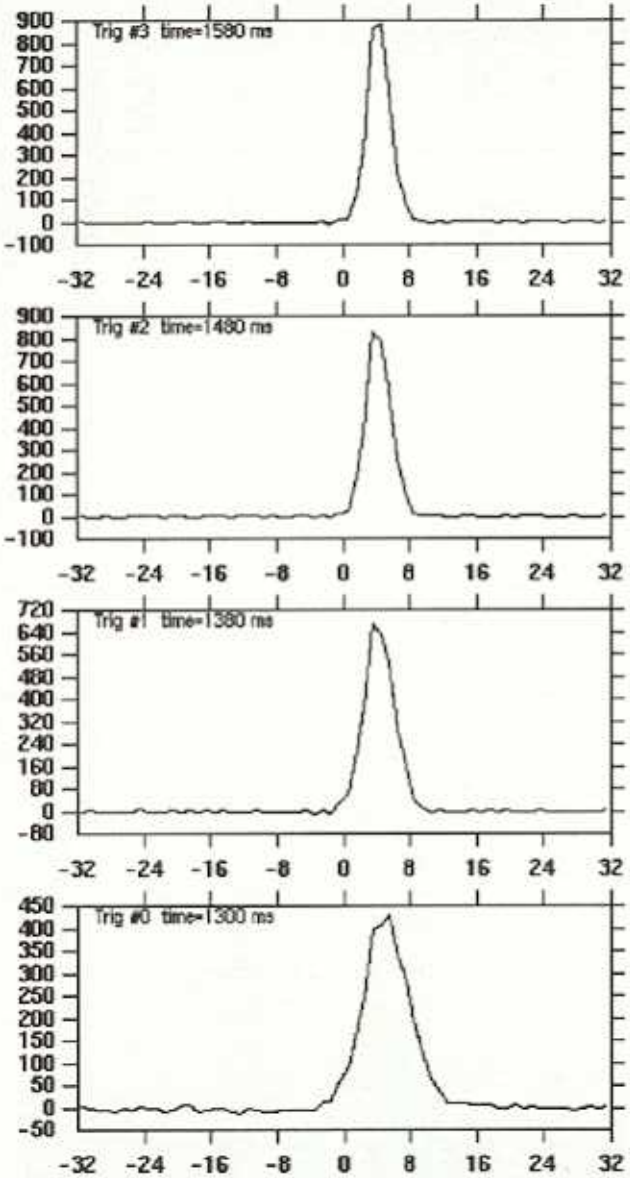
Netscape: Graphic

File Edit View Go Communicator Help

Agsipm PPM User: Polarized_Proton_u4

SetupAcq DfltDisplay Configure Lib Analysis He





Acquisition Single-Cycle

Continuous Acquisition Single-Cycle

Acquisition Multi-Cycle

Continuous Acq/Log Single-Cycle

Reset StripCharts

Sun Mar 16 09:01:50 2

Cen(mm)	H	V
1580	2.87	5.40
1480	2.97	5.34
1380	6.45	5.42
1300	7.33	6.43

Sig(mm)	H	V
1580	2.39	1.63
1480	2.96	1.81
1380	4.66	2.18
1300	5.02	3.33

	CBM
1580	223
1480	237
1380	255
1300	258

Emitnce	H	V
1580	30.02	13.94
1480	31.58	11.79
1380	42.64	9.34
1300	22.63	9.95

Sun Mar 16 09:01:50 2003

agsCycle 9199

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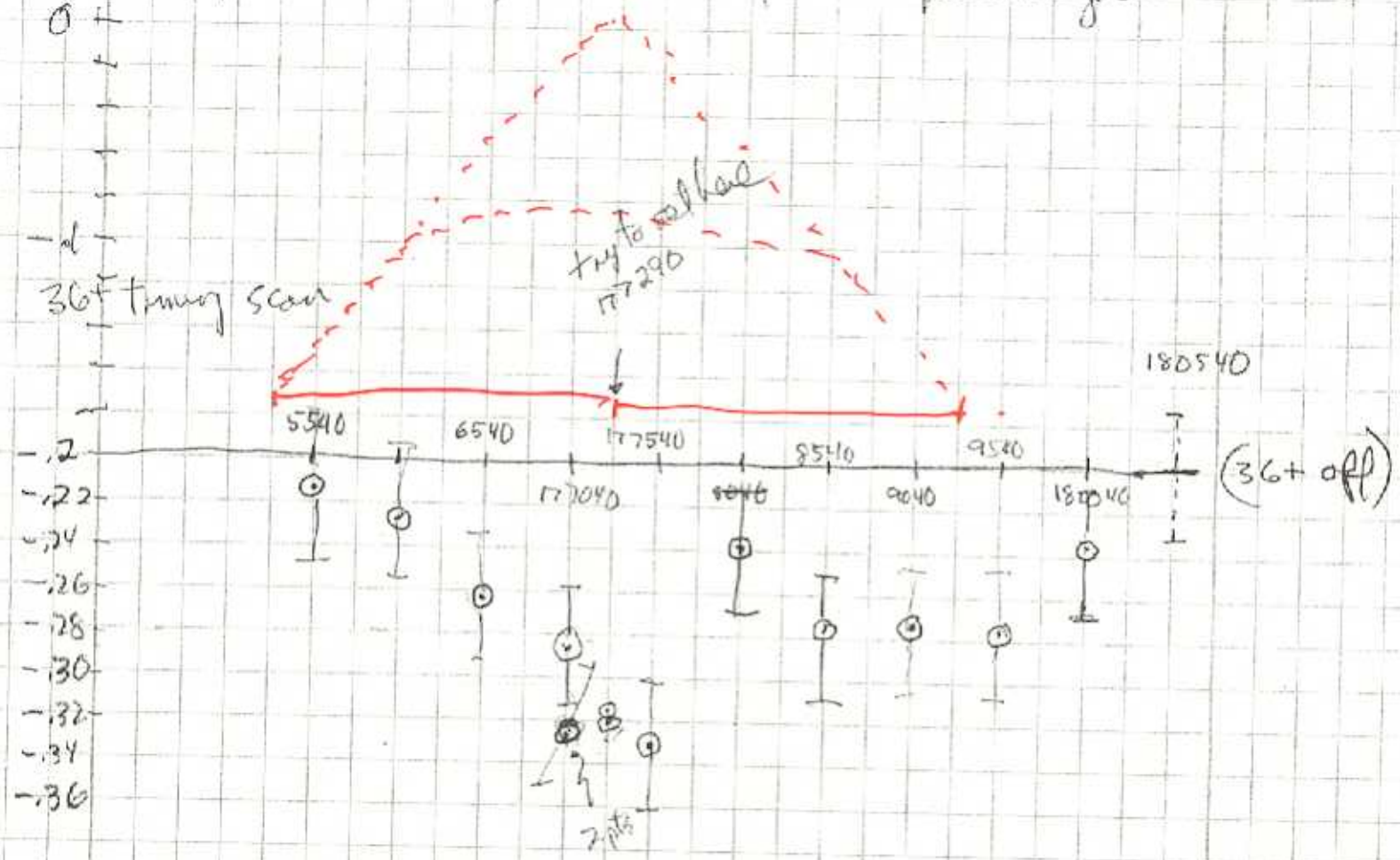
.7110
.7020
0090

16 March 02 00:00 Alvers

68 = 36+

steve is mid way in a timing scan @ 36+
if push too late, the ~~timing~~ pulses go away!



ave ∅
9500)

To check.

9)

36 : tune u below dive 8.713 – 8.7165

⊙250 – if ok @ 177290 increase int 6×10^10

a) bring on IPM + leaks (456) (158 mm)

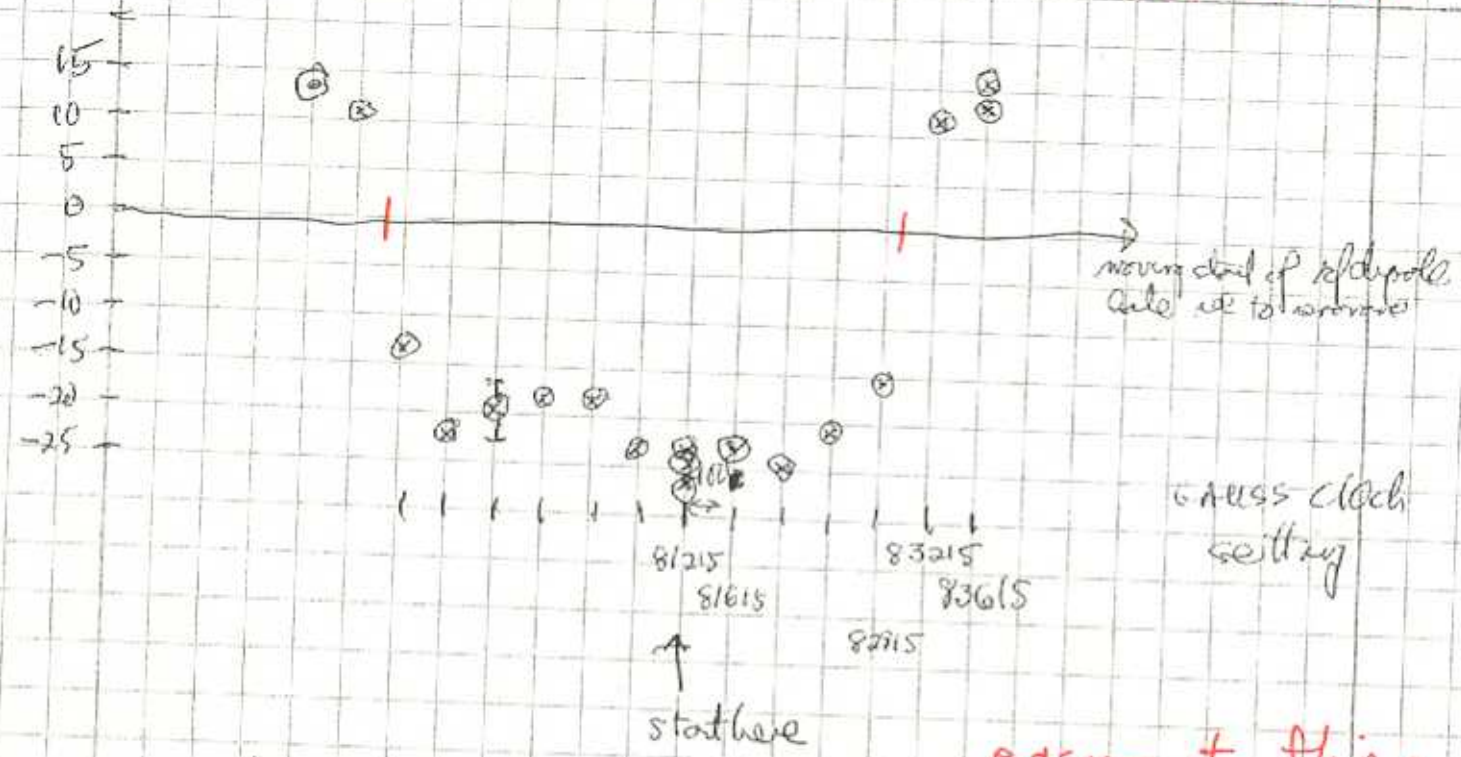
b) lower 36 – tune to clear loss approx set = 8.682 → 8.6815

c) adj ξ_v @ 36+ – see if can improve coherence 8.6817 ok

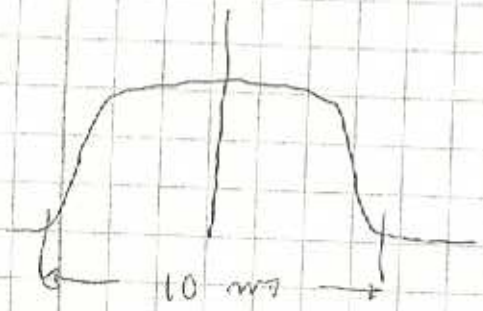
clear

 14 March 03 Alexa (+ Christoph) Timing Scan 12+

$\epsilon\gamma = 12+$



easy - it flips

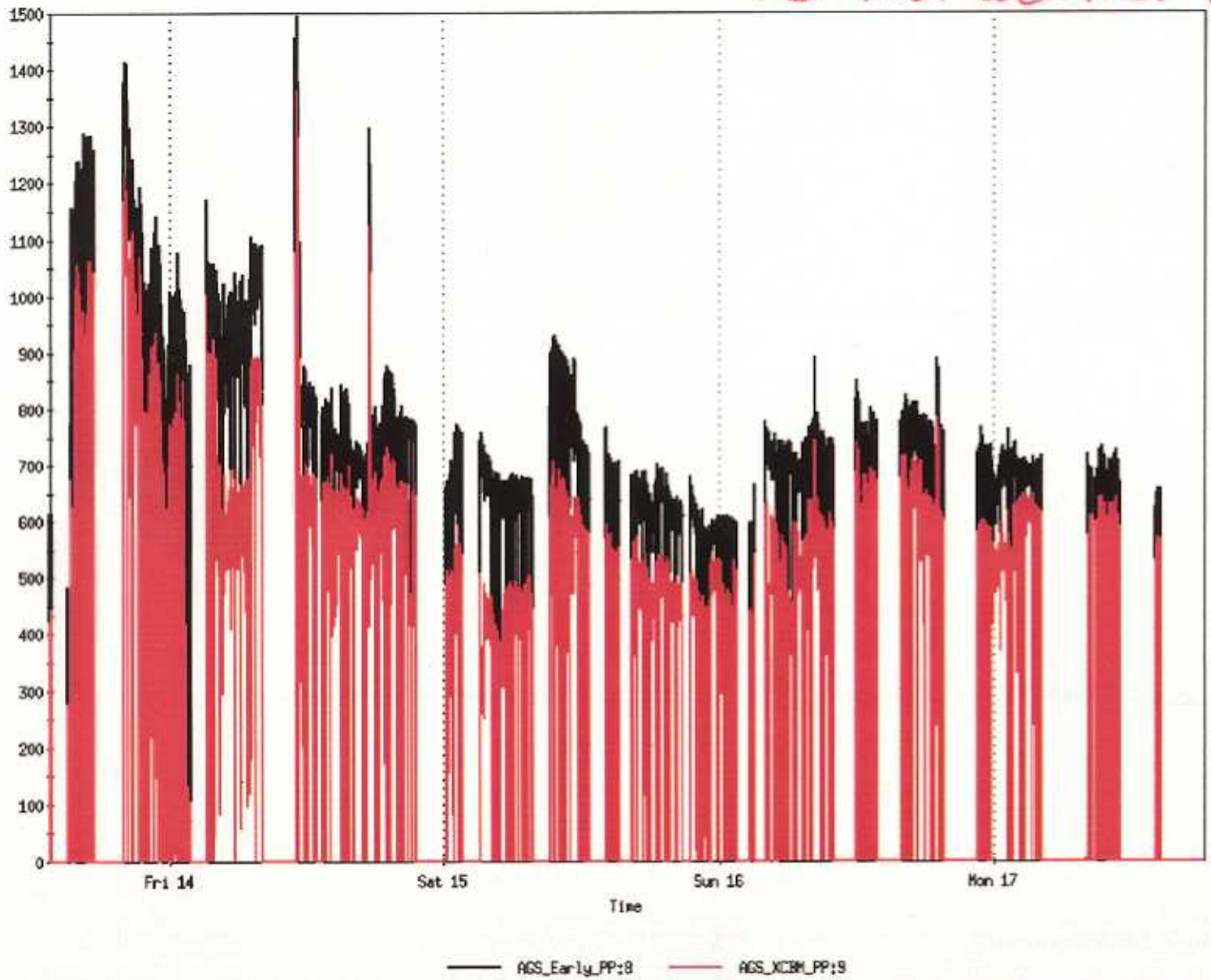


@ 21.9 Gauss/ms (mean) + 219G = 4271

177805 is new 36+ timing, (177025 is original timing but not there now)

(177823 is [illegible])

Thu Mar 13 13:34:50 – Mon Mar 17 18:23:57

Window Event

the last weekend