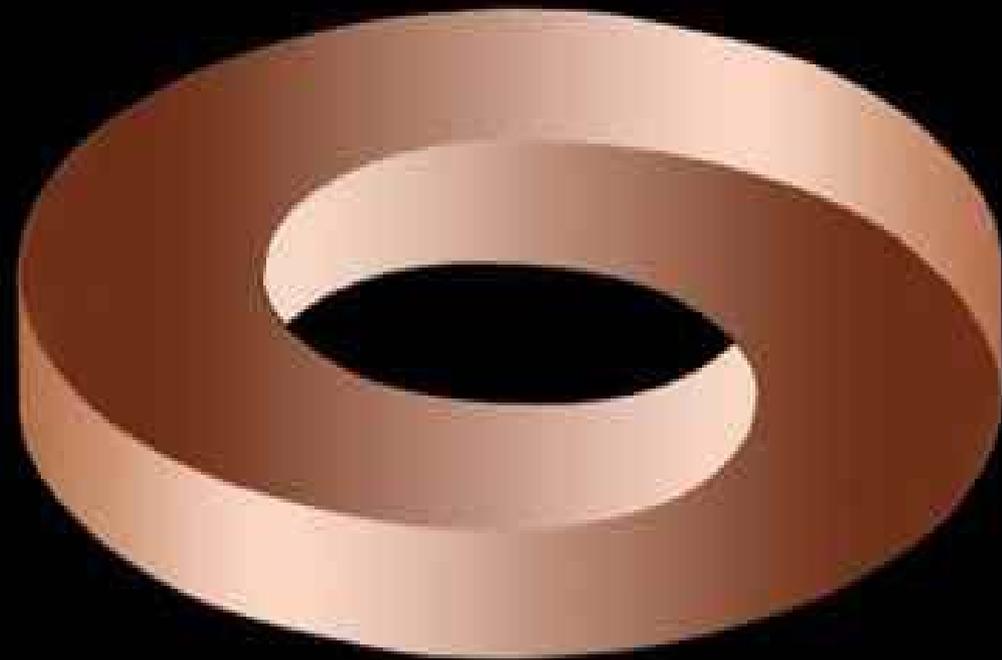




Machine status



Machine - Experiments
January 12, 2005





Status overview

Tue Dec 28	beginning “2 weeks” start-up
Wed Dec 29	blue and yellow available
Tue Jan 4	beginning “2 weeks” ramp-up
Tue Jan 11	beginning of physics today if all is well....

4 weeks set-up/ramp-up → 2 weeks

(used set-uptime with blue ahead of time)



Ramp development

Monday: R-2-R synchro

Tuesday night: first scheduled collisions overnight
(initial set-up : 28x ~3e9)

intensity development

- ❑ Losses around transition
- ❑ Losses at beta* squeeze (→permit pulls)

Key issue: beam-beam on the ramp:

- ❑ Increase synchro loop gain (RF group)
- ❑ Tweak RF dipole yellow t200→store (Vadim)
(Friday afternoon)

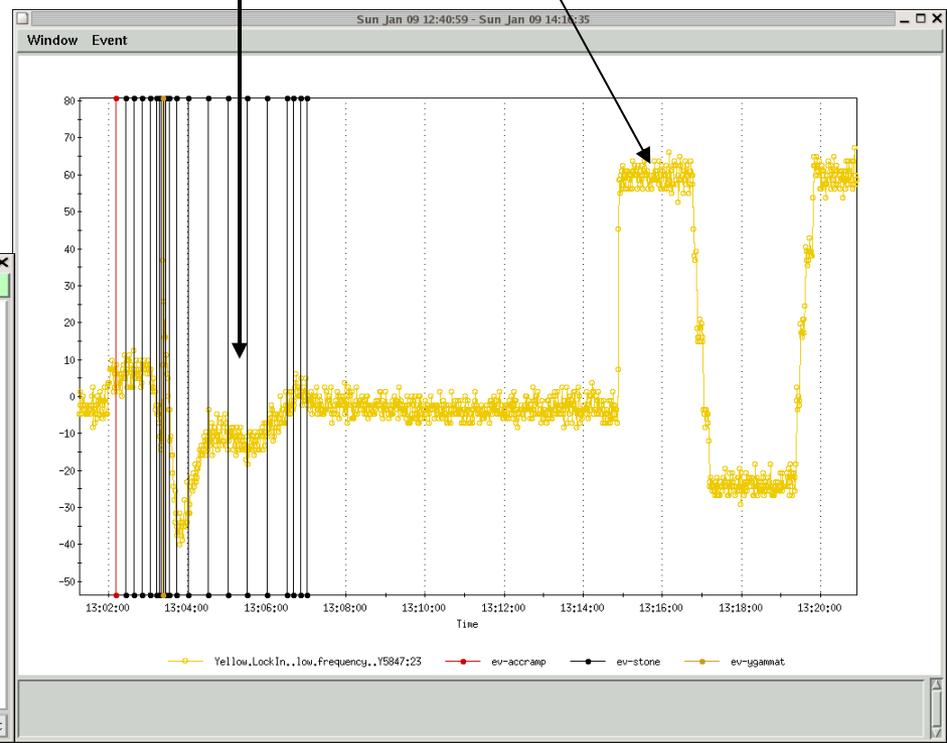
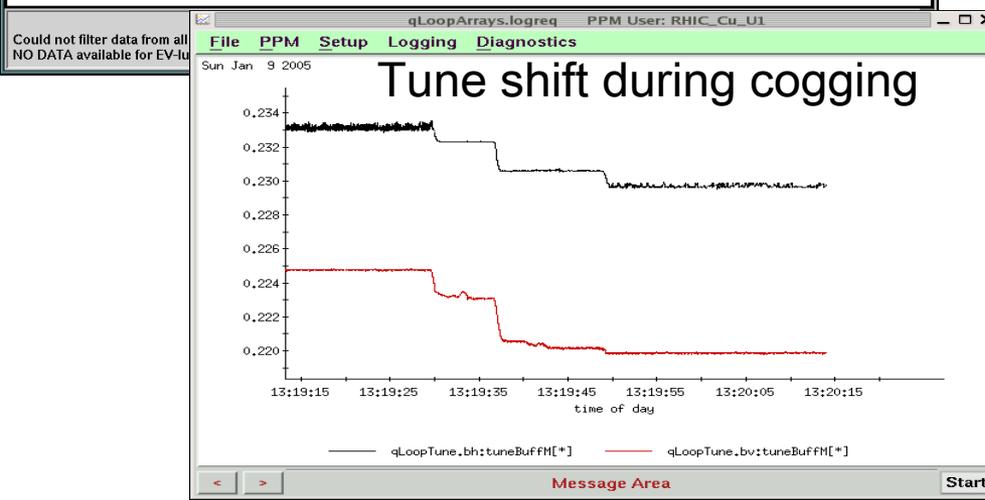
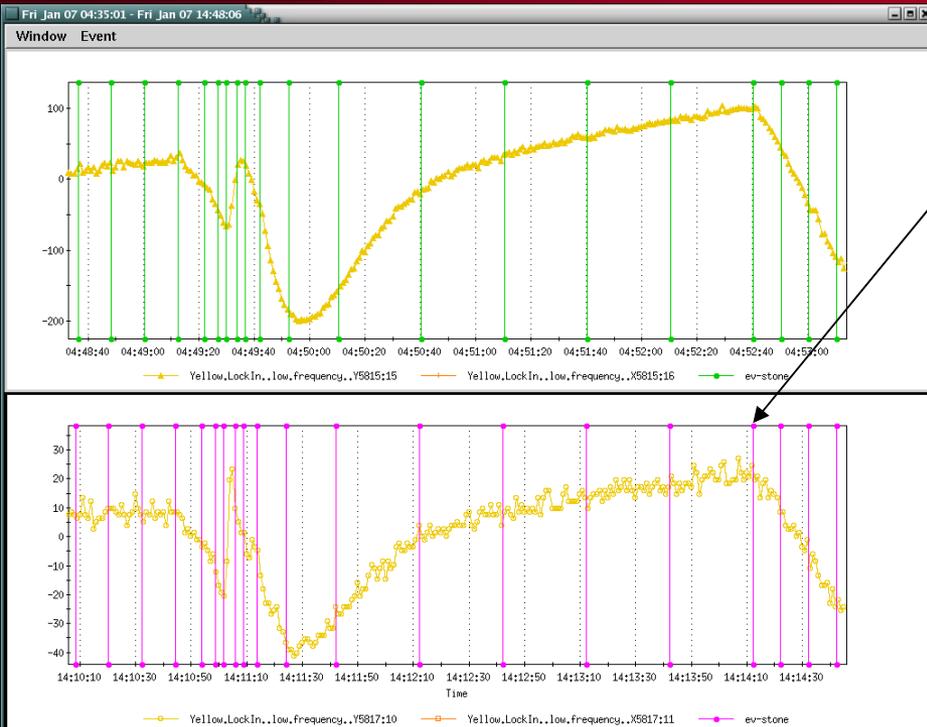


R2R synchro improvement

Increase synchro loop gain

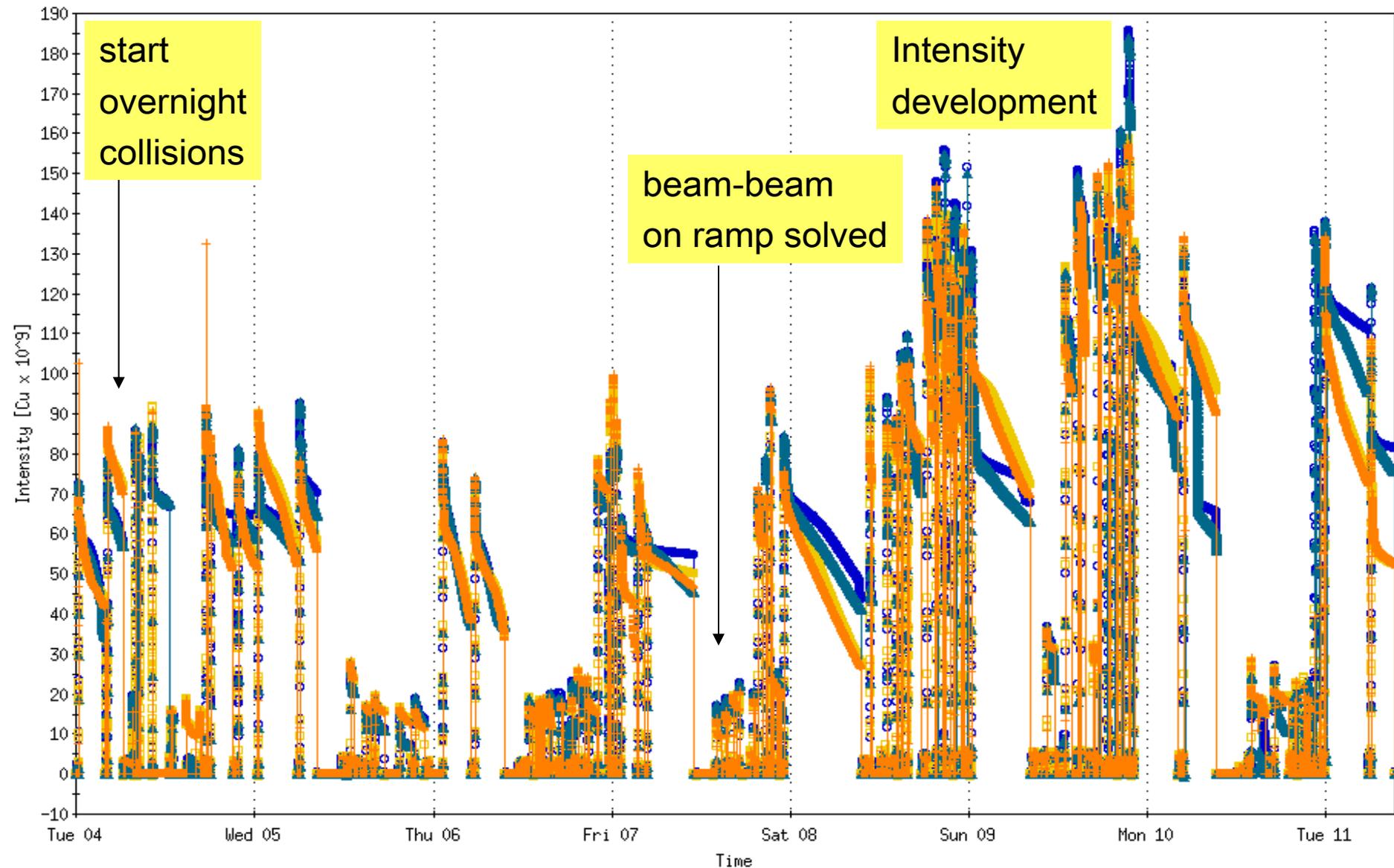
RF dipole

cogging



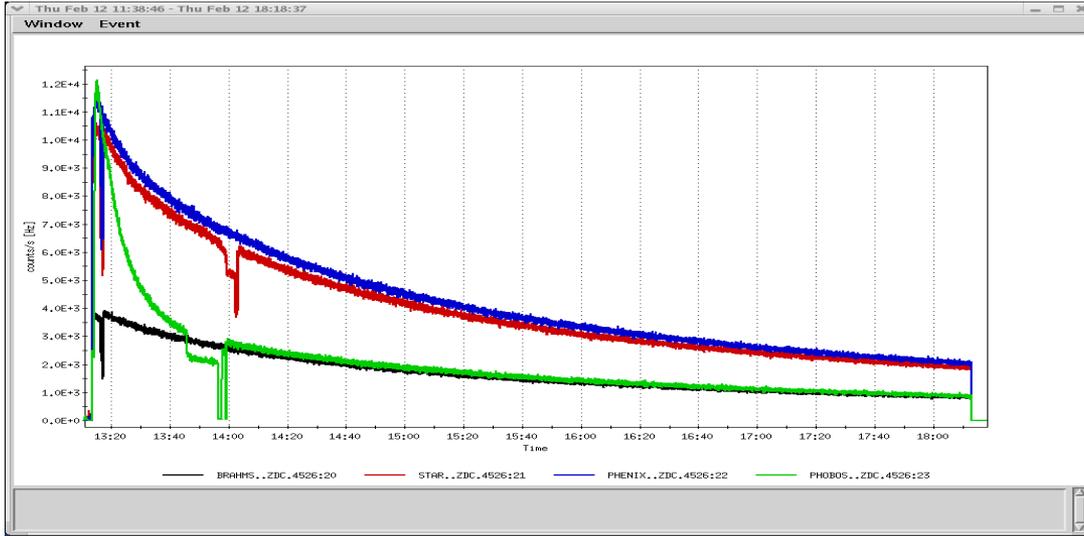
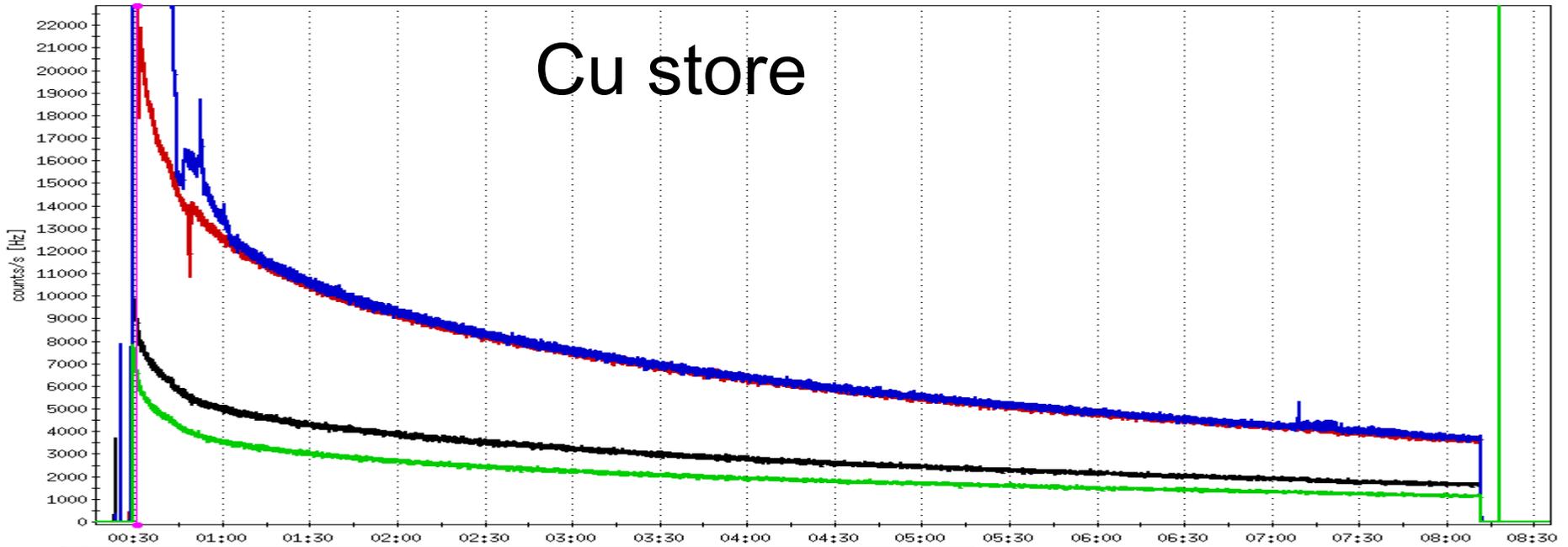


Week 0 – beam intensity





Sunday owl store (28x 4.7/4.1)



Au store
Production
45x1e9 Au/bunch



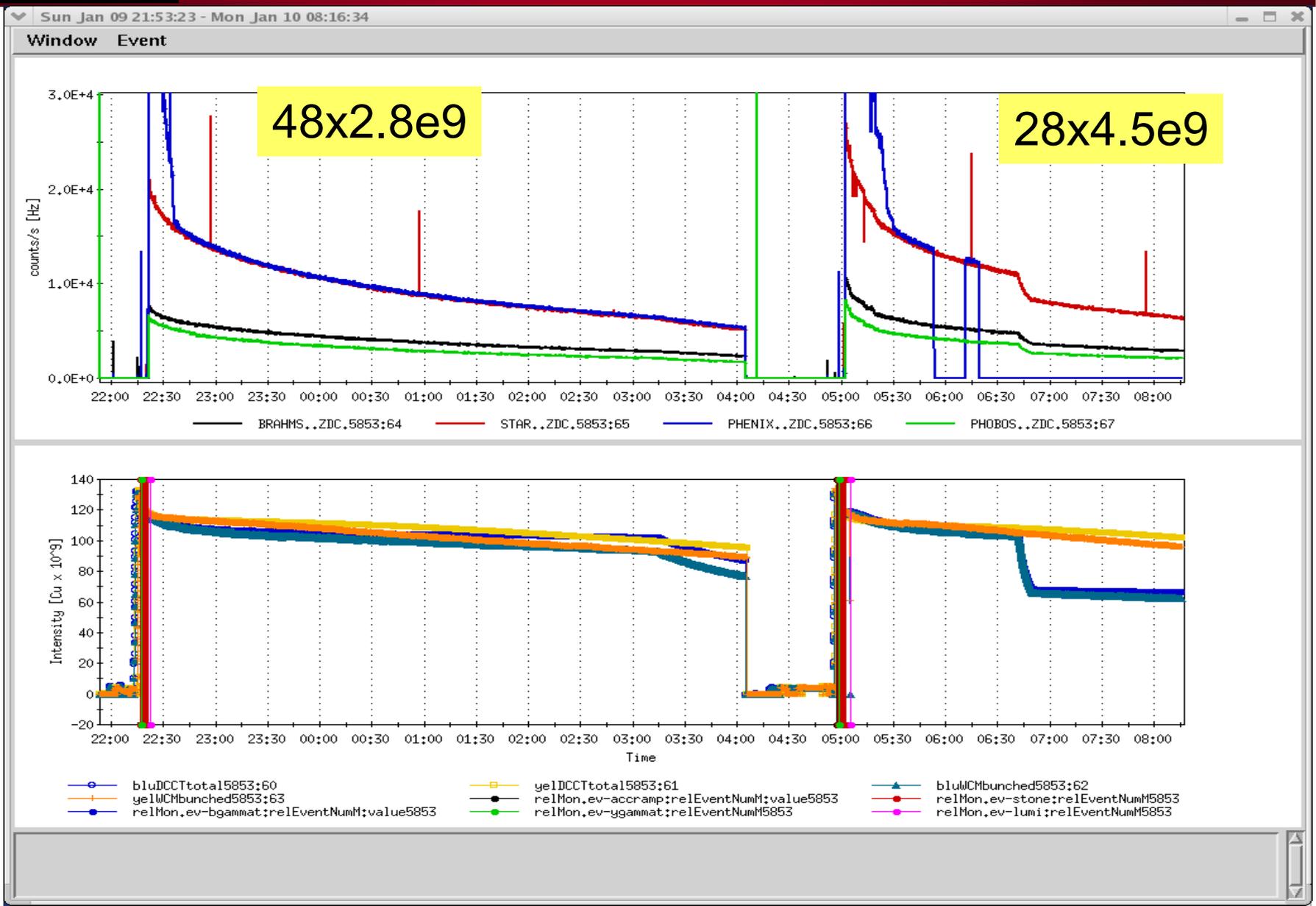
Sunday – intensity development

□ Bunch intensity (Yun shift)

#b	B _{int}	Y _{int}	B _{trans}	Y _{trans}	Collision
28	5.3	5.3	86%	92%	28K
48	3.0	3.1	94%	95%	27K
48	3.8	3.3	90%	90%	?
56	2.3	2.3	96%	93%	22K
56	2.8	2.7	91%	92%	24K



Monday owl stores

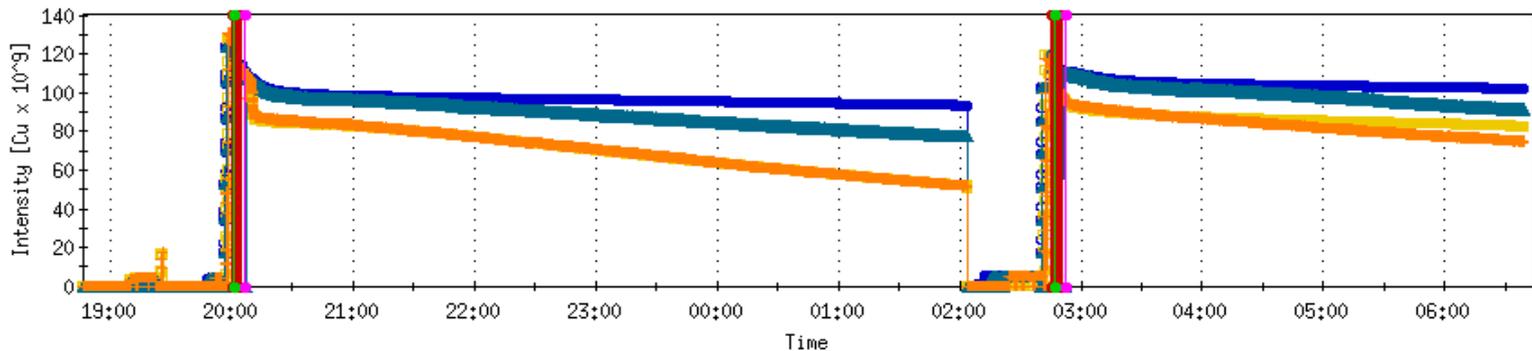
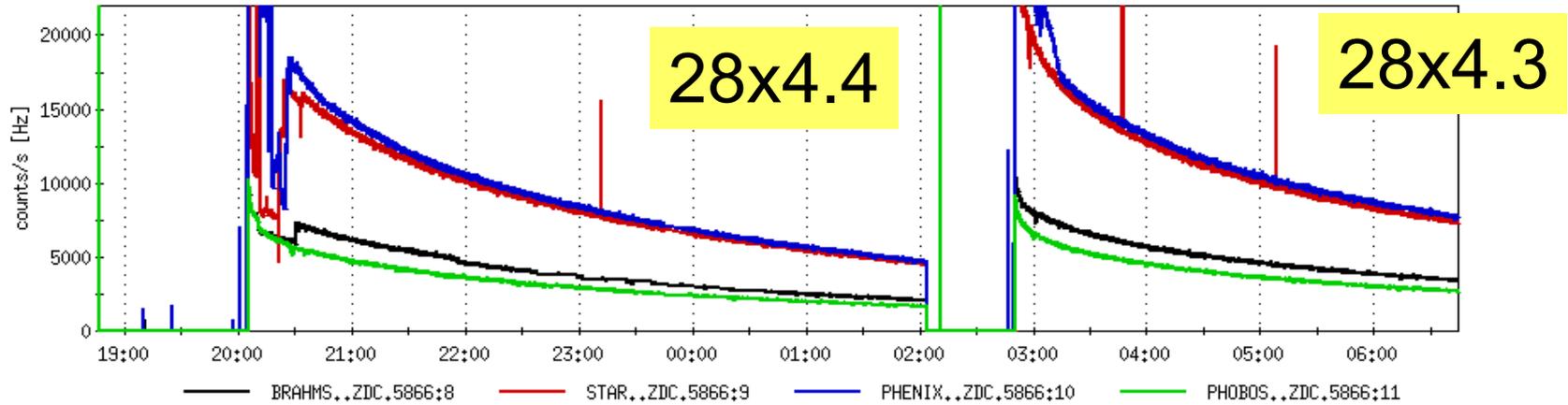




Today's owl stores

Tue Jan 11 18:46:55 - Wed Jan 12 06:44:22

Window Event



- bluDCCTtotal5866:4
- yelDCCTtotal5866:5
- bluWCMbunched5866:6
- relMon.ev-accramp;relEventNum;value5866
- relMon.ev-stone;relEventNum;5866
- relMon.ev-lumi;relEventNum;5866
- yelWCMbunched5866:7
- relMon.ev-bgammat;relEventNum;value5866
- relMon.ev-ygammat;relEventNum;5866



Collision rates

28X4.5	expect ~46K	measured ~29K
48x3.0	expect ~29K	measured ~21K

Origin discrepancy:

- ❑ **Beta***
 - ❑ **Cu-cu cross section (assumed 2) → will measure**
 - ❑ **ZDC do not see all collisions**
 - ❑ **Transverse emittance**
 - measured AtR yesterday ~19, 11 (5e9)
 - measured AtR weeks ago ~12, 9 (4.5e9)
 - measured Vernier scan ~38
- **emittance measurement, control needed to improve luminosity**



Luminosity development

Expected limitations

- ❑ **Pressure rises** (Phobos, transition, re-bucketing), e-clouds
First indication Phobos PR with 48x3.0 ramp
- ❑ **Beam-beam** – ramp (mostly fixed) , at store (working point)
- ❑ **Background** → not yet
- ❑ **Transverse Emittance**

Luminosity development

- ❑ Increase bunch intensity **4.5→6-7e9**

Transition optimization for bunch intensity >4.5e9

Emittance measurement, control (injectors, emittance growth RHIC)

- ❑ Increase number of bunches (if bunch intensity limitations)

- ❑ **IR correction**, yellow
- ❑ Beta* measurements
- ❑ **Common cavities**
- ❑ Stochastic cooling



Operations issues

- ❑ Fixed Store lengths
use BERT to broadcast
- ❑ Ramp “take-off” check list
- ❑ Ramp check/maintenance every morning
(day shift leader)
- ❑ Update/use of configuration page
Beam parameters (working points, inj, store...)
Nominal ramp bunch intensity, #bunches