

## Run 10 plan based on 25 Nov Revised Plan and $\sqrt{s}=200$ extended by 1 week

- Dec. 1, Begin cool down to 4.5K
- Dec. 4, Cooldown to 4.5K complete in both rings!
- Dec. 5, beam setup in RHIC begins.
- Dec 16, 20 hr unplanned Maintenance day
- Dec 20 (AM)-21(PM), blizzard 09 shut us down
- Dec. 27, RHIC Setup complete, begin Ramp Up for Physics (was 14 Dec, late)
- Dec 31 (midnight-store 11340), Machine, Physics declared (store 11340)  $\sqrt{s}=200$  GeV/n Au-Au
- Jan 2 (midnight) STAR in Physics Mode
- Jan 8 (0600) PHENIX in Physics Mode
- Jan 12, Rebucketing not yet routine, stochastic cooling still to come.
- Jan 22, changed beta\* from 0.6 to 0.7 meters, rebucketing ~established, yellow transverse stochastic cooling on
- Mar. 18 (0556), End 10 week  $\sqrt{s} = 200$  GeV/n Run, begin  $\sqrt{s} = 62.4$  GeV/n setup
- Mar. ~~20~~ **19**, Begin 4 week  $\sqrt{s} = 62.4$  GeV/n run
  - Machine physics 19 March for stores  $\geq 11954$
  - PHENIX Physics 19 Mar for stores  $\geq 11955$
  - STAR Physics 22 March for stores  $\geq 11976$
- Apr. ~~17~~ **8**, End 4 week  $\sqrt{s} = 62.4$  GeV/n Run, begin  $\sqrt{s} = 39$  GeV/n setup
- Apr. ~~19~~ **9**, Begin 1.5 week  $\sqrt{s} = 39$  GeV/n run
- Apr. ~~30~~ **20(?)**, End 1.5 week  $\sqrt{s} = 39$  GeV/n Run, finish n= 0.67 studies sometime before polarity switches begin (i.e. this is a placeholder)
- May 1, complete n= 0.67 studies for pp and  $\sqrt{s} = 7.7$  GeV/n setup (**12 hr pol. switches**)
- May. 3, Begin 4 week  $\sqrt{s} = 7.7$  GeV/n run
- **May 23 – 28 IPAC (Kyoto)**
- **May 22 Jun 3, Satogata is away**
- May 31, End 4 week  $\sqrt{s} = 7.7$  GeV/n Run, begin  $\sqrt{s} = 11.5$  GeV/n setup (**4-6 hr polarity switch, if necessary**)
- Jun 2, begin  $\sqrt{s} = 11.5$  GeV/n for STAR
- Jun 16, end 2 week  $\sqrt{s} = 11.5$  GeV/n run, begin  $\sqrt{s} = 5$  GeV/n setup (**4-6 hr polarity switch, if necessary**)
- Jun 18, begin  $\sqrt{s} = 5$  GeV development
- Jun 21, end 3 days at  $\sqrt{s} = 5$  GeV/n
- Jun 22 , Begin Cryo Warm-up
- Jun 23, Warm-up complete, Run 10 ends – **29.2 CRYO WEEKS**

## Run 10 plan based on 25 Nov Revised Plan and $\sqrt{s}=200$ extended by 1 week

- Mar. ~~20~~ **19**, Begin 4 week  $\sqrt{s} = 62.4$  GeV/n run
  - Machine physics 19 March for stores  $\geq 11954$
  - PHENIX Physics 19 Mar for stores  $\geq 11955$
  - STAR Physics 22 March for stores  $\geq 11976$
- Apr. ~~17~~ **8**, End 4 ~~2.9~~ week  $\sqrt{s} = 62.4$  GeV/n Run, begin  $\sqrt{s} = 39$  GeV/n setup
- Apr. ~~19~~ **9**, Begin 1.5 week  $\sqrt{s} = 39$  GeV/n run
- Apr. ~~30~~ **20(?)**, End 1.5 week  $\sqrt{s} = 39$  GeV/n Run, finish  $v = 0.67$  studies for pp sometime before polarity switches begin (i.e. this is a placeholder)

### Below schedule TBD

- May 1, Begin  $\sqrt{s} = 7.7$  GeV/n setup (**12 hr pol. switches**)
- May. 3, Begin 4 week  $\sqrt{s} = 7.7$  GeV/n run
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- Mar. ~~20~~ **19**, Begin 4 week  $\sqrt{s} = 62.4$  GeV/n run (**gained a day of contingency**)
  - Machine physics 19 March for stores  $\geq 11954$
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- Jun 23, Warm-up complete, Run 10 ends – **29.2 CRYO WEEKS**

# Run 10 Au-Au Goals

3/30/10

- STAR

- $\sqrt{s} = 62 \text{ GeV/n}$

- Luminosity Sampled/Delivered = ?/90  $\mu\text{b}^{-1}$

- 100M Min-bias events

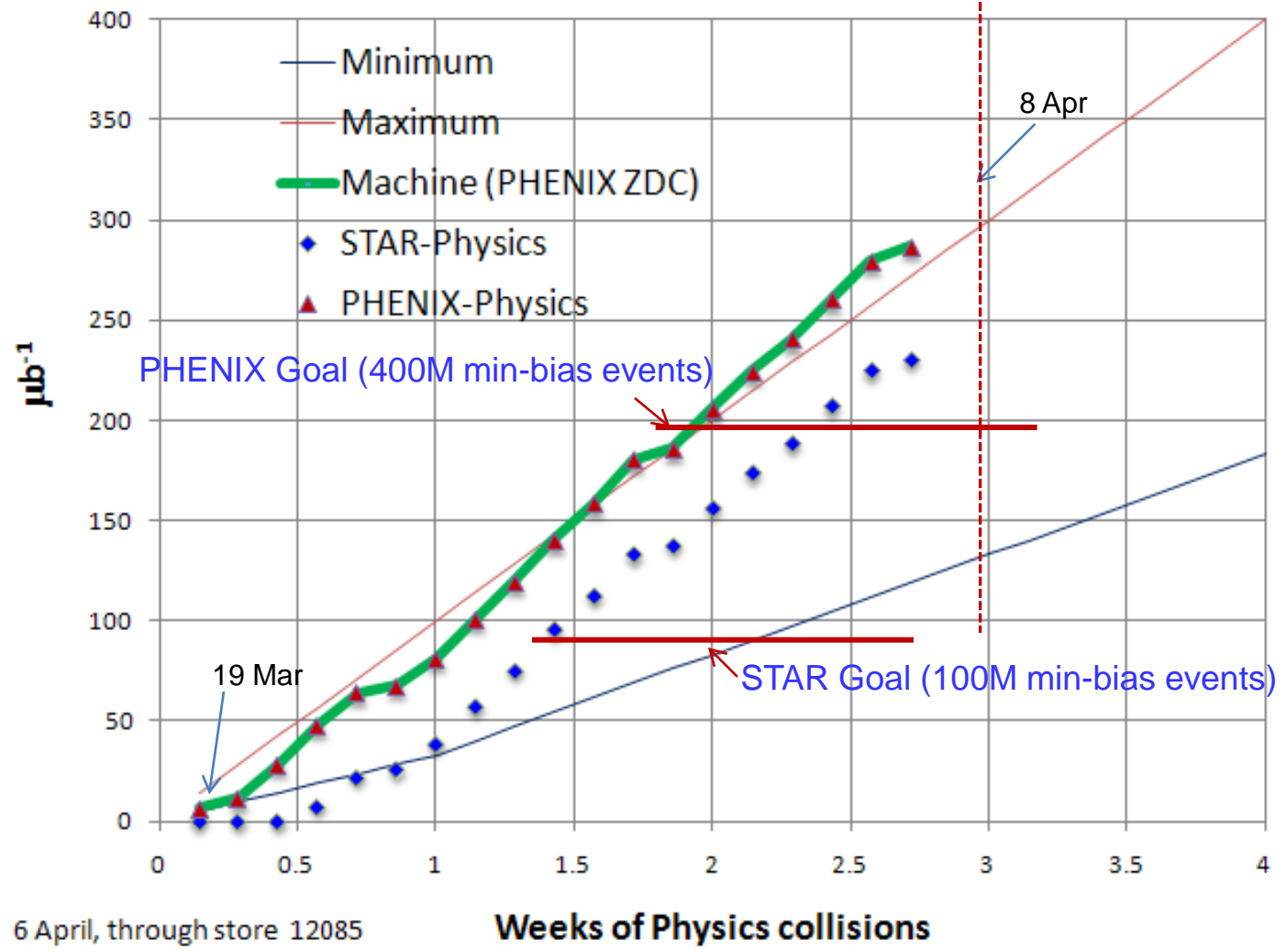
- PHENIX

- $\sqrt{s} = 62 \text{ GeV/n}$

- Luminosity Recorded/Delivered = 64/193  $\mu\text{b}^{-1}$

- 400M Min-bias events

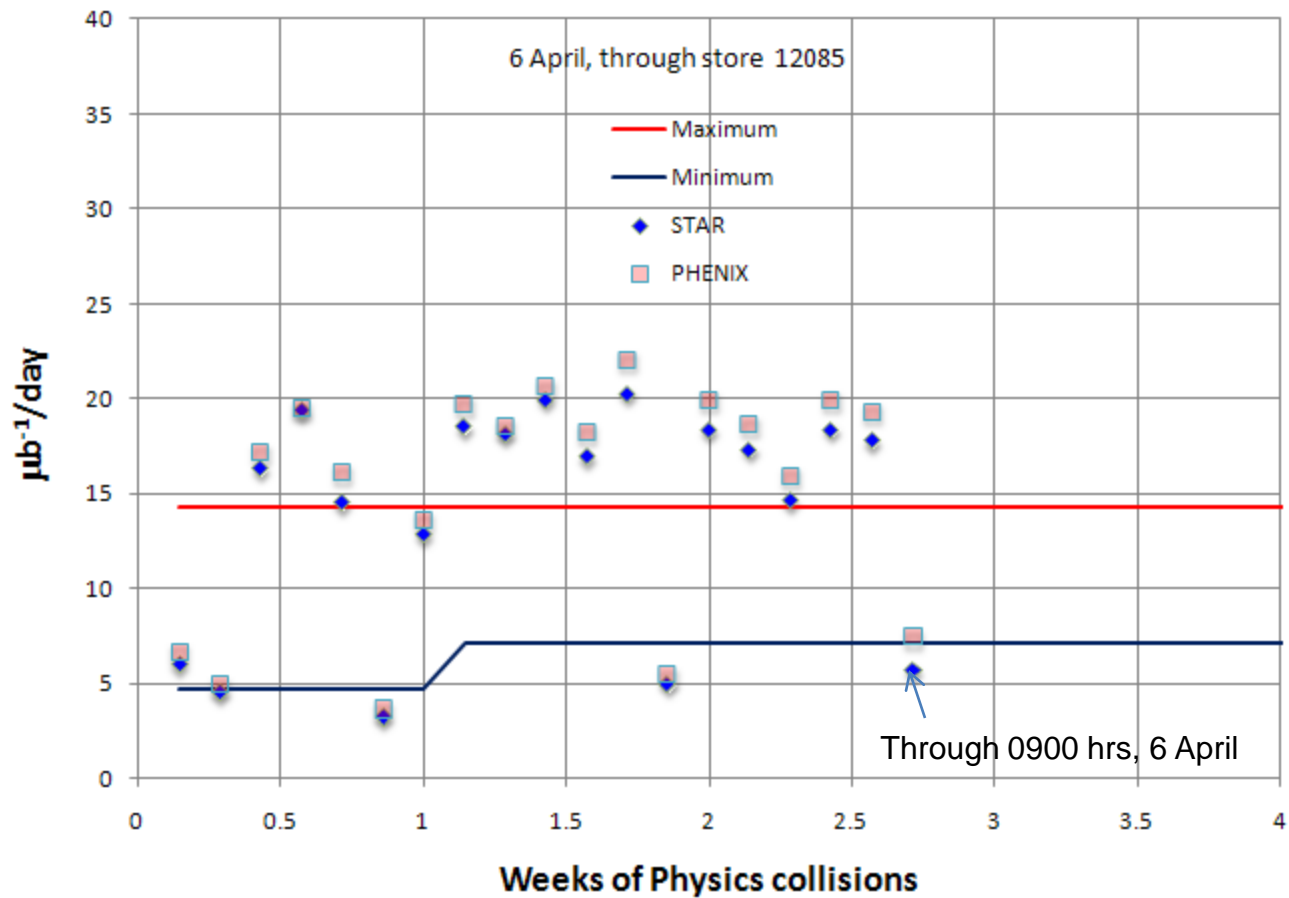
# Run 10, 31 x 31 GeV/n Au Delivered Luminosity



6 April, through store 12085

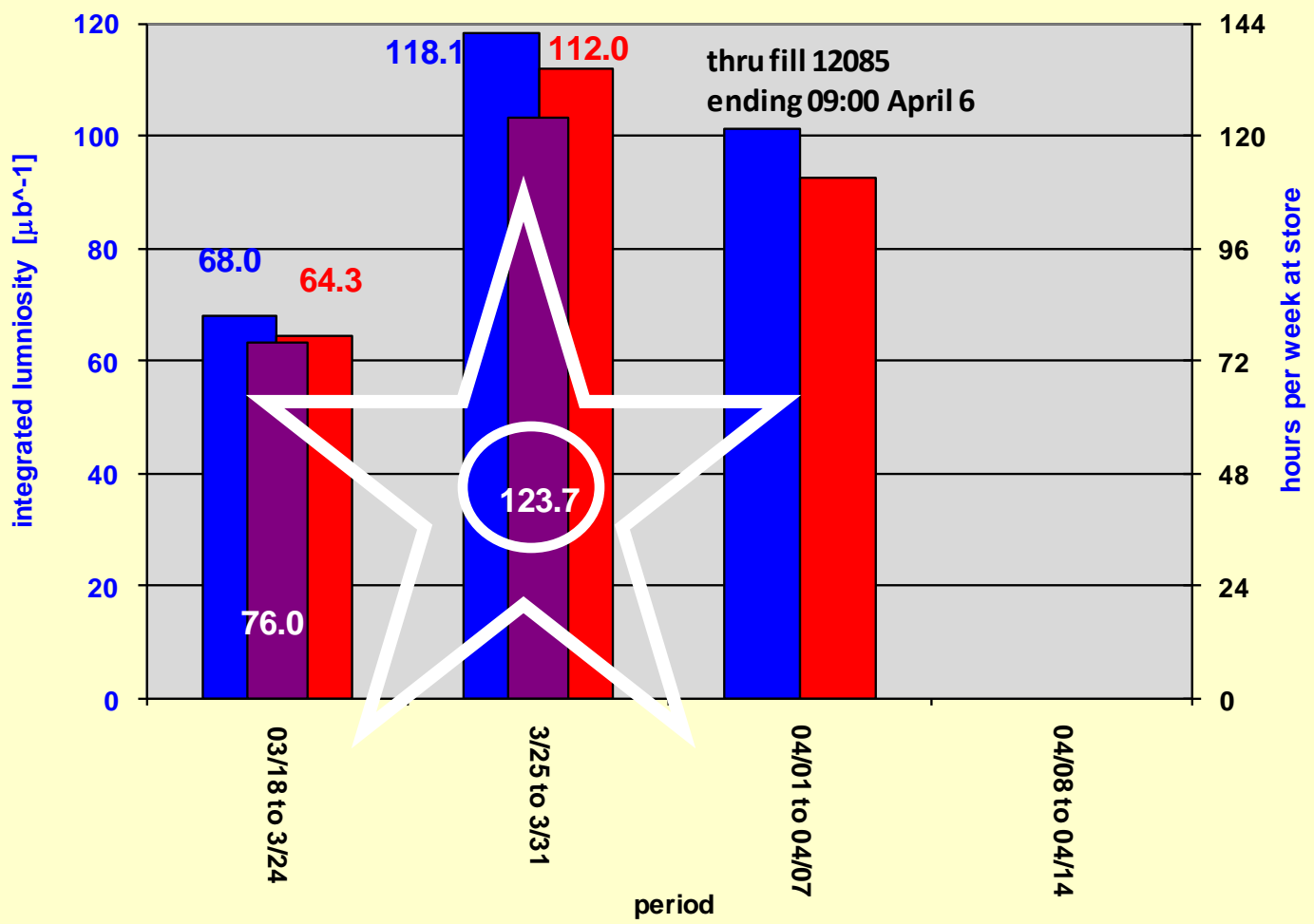
Weeks of Physics collisions

### Run 10, 31 x 31 GeV/n Au Delivered Luminosity per day



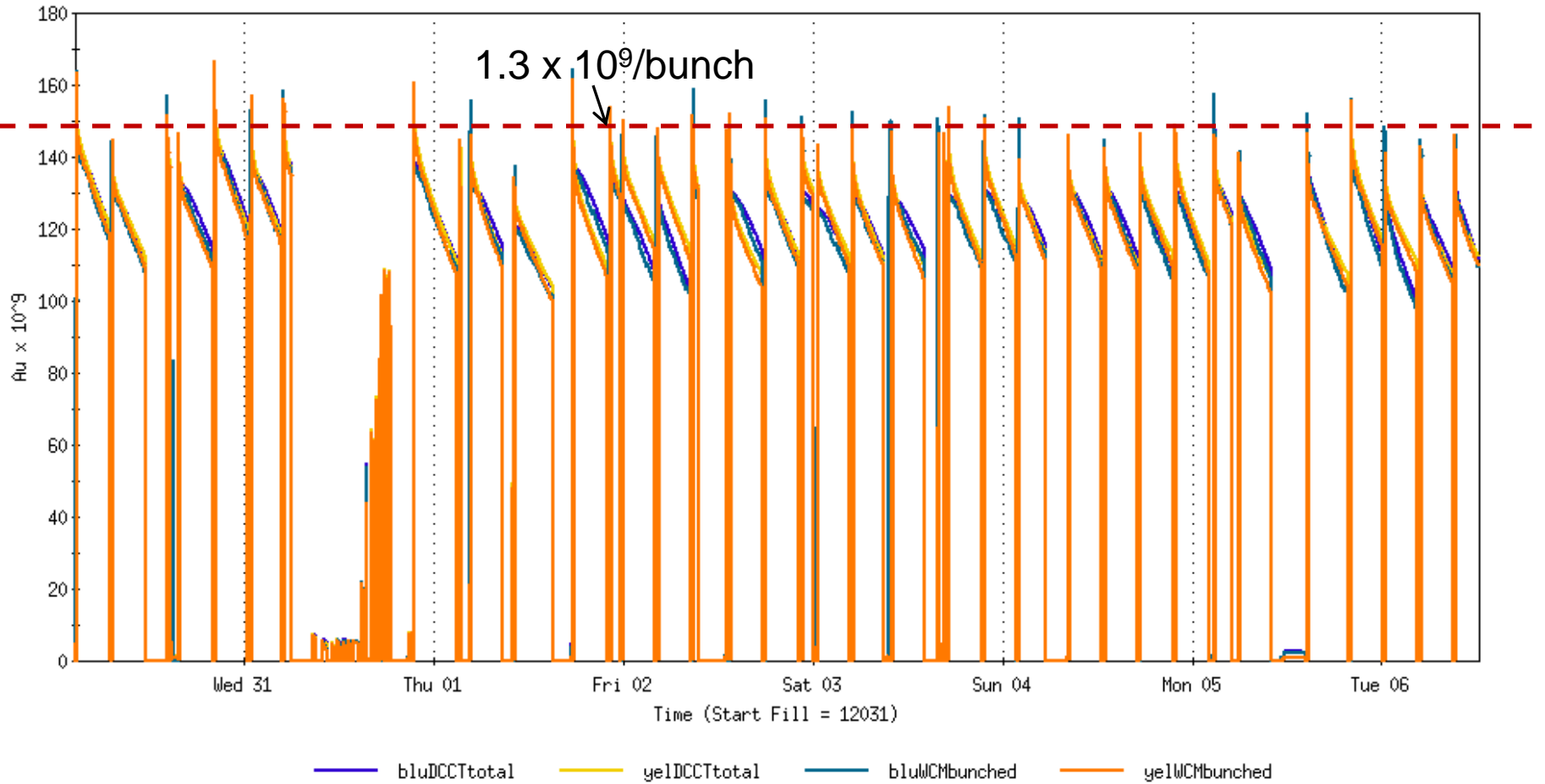
# Run 10 (AuAu) -- Integrated Luminosity by week

■ Phenix    ■ STAR    ■ (lumi) hours at store



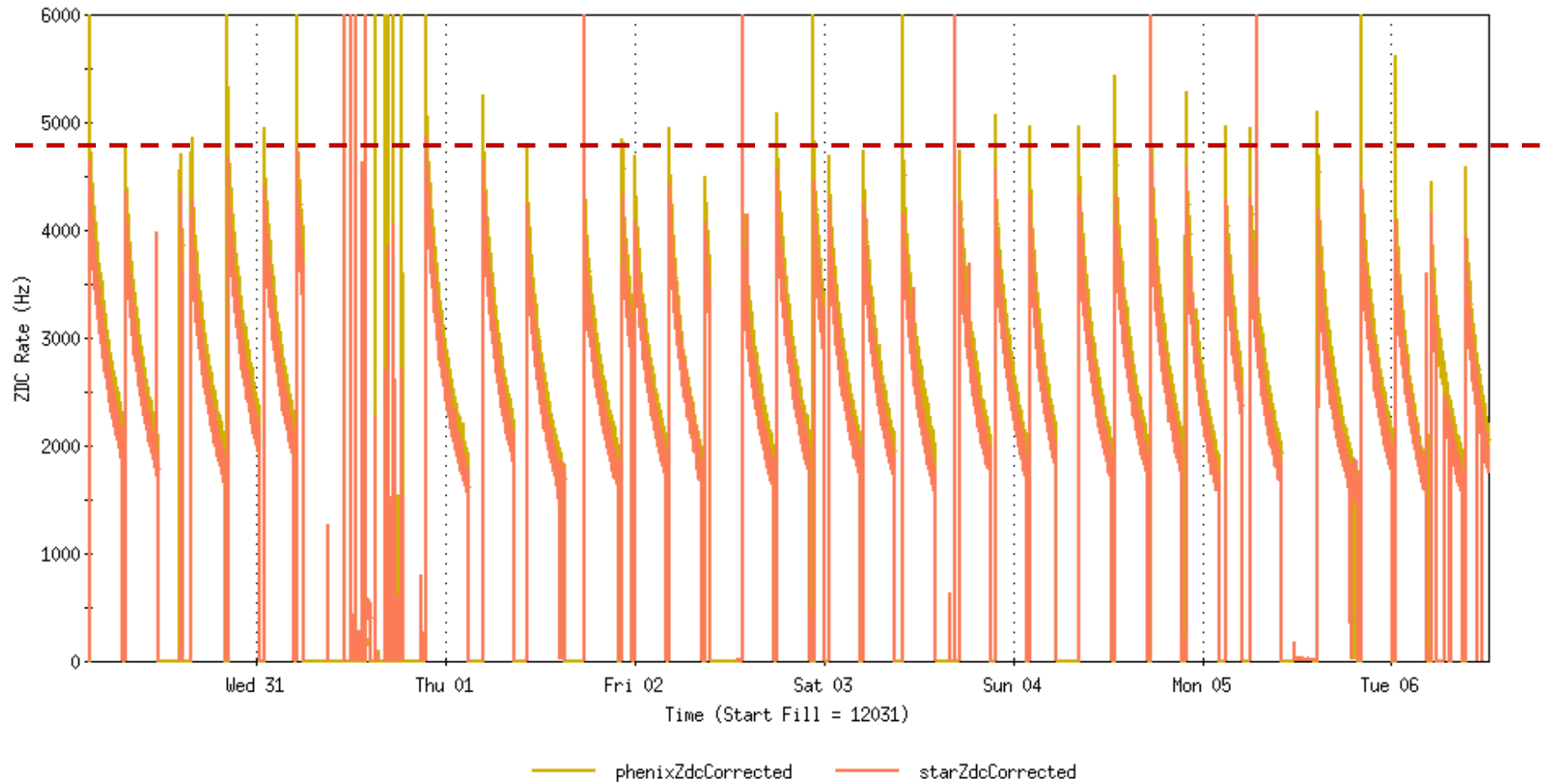
# 31 x 31 GeV/n Au, 30 March to Present

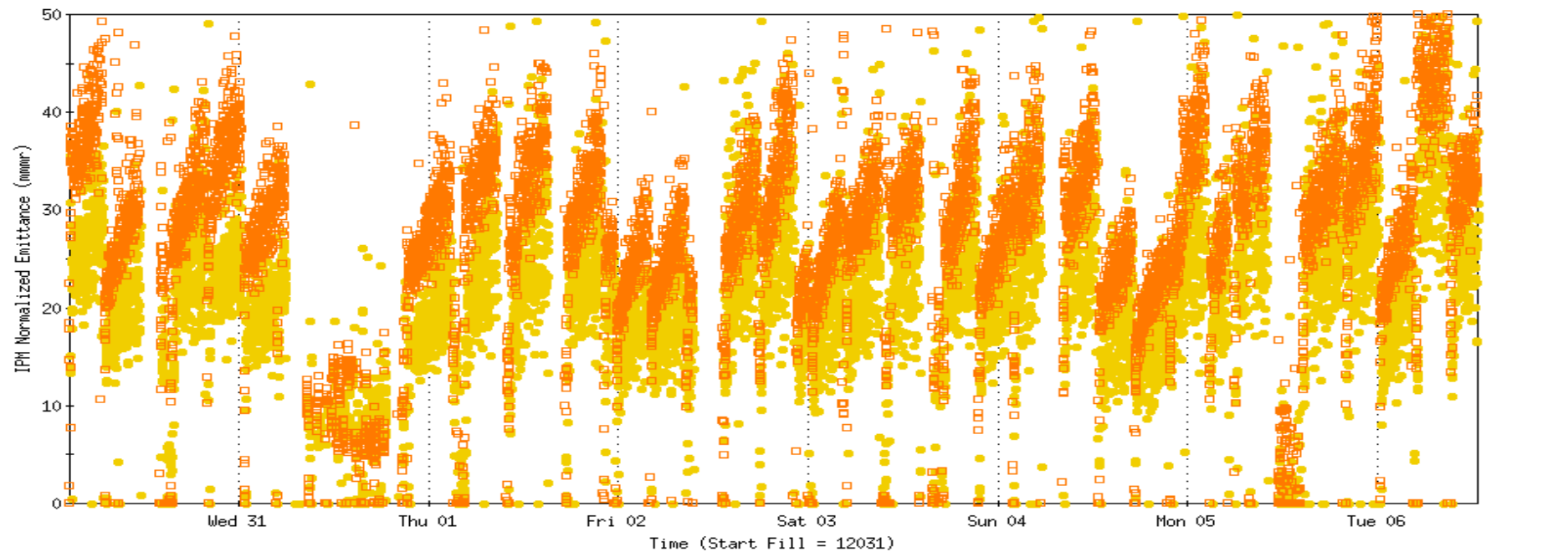
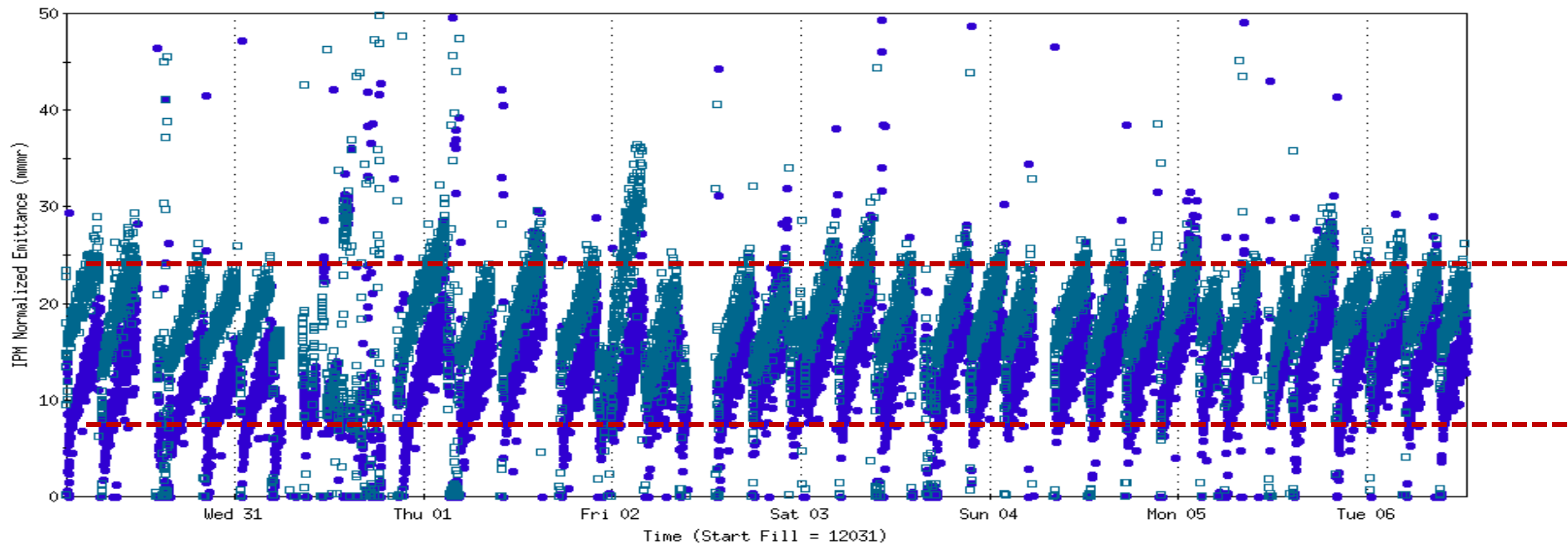
RHIC - DCCT total beam & WCM bunched beam





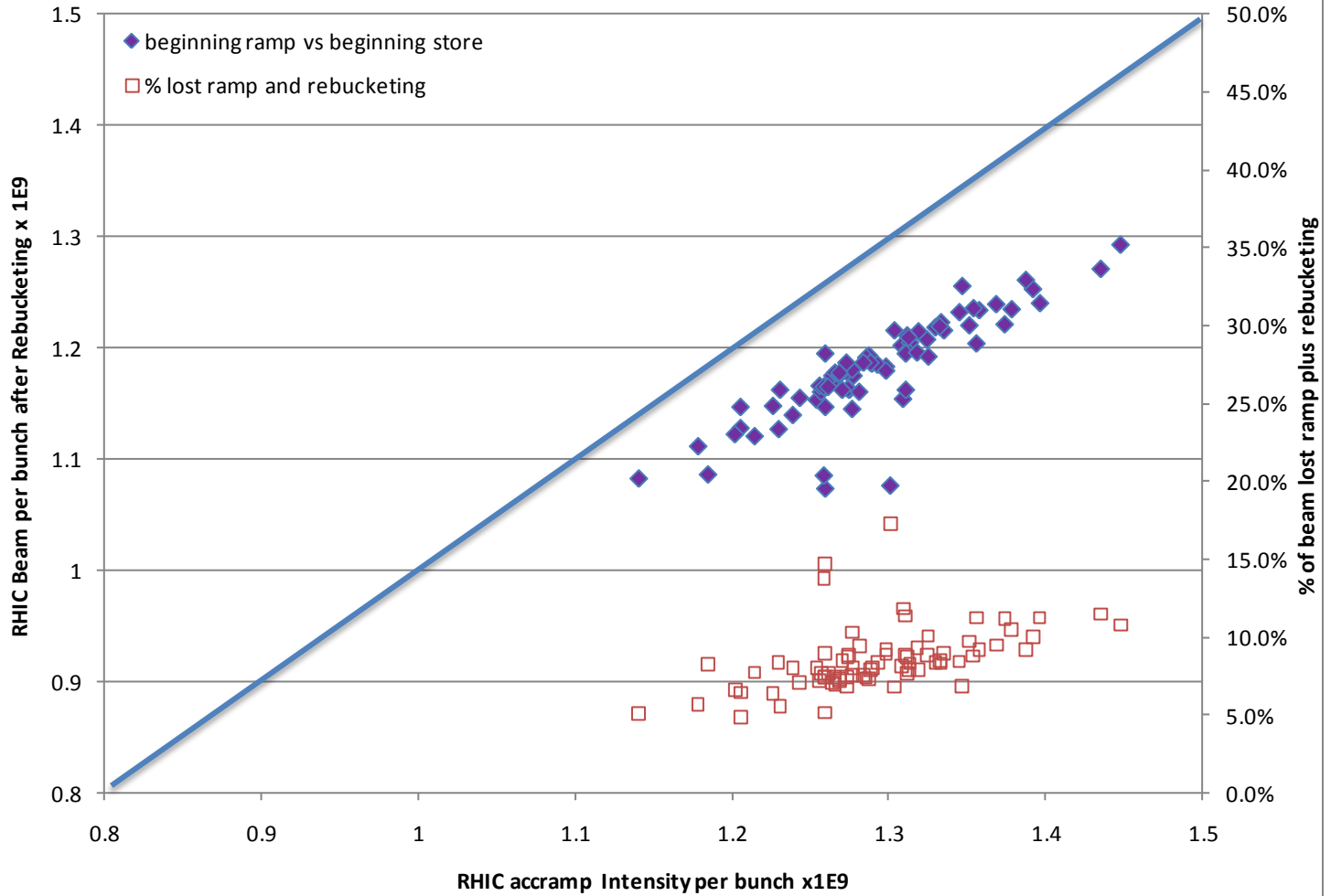
# 31 x 31 GeV/n Au, 30 March to Present



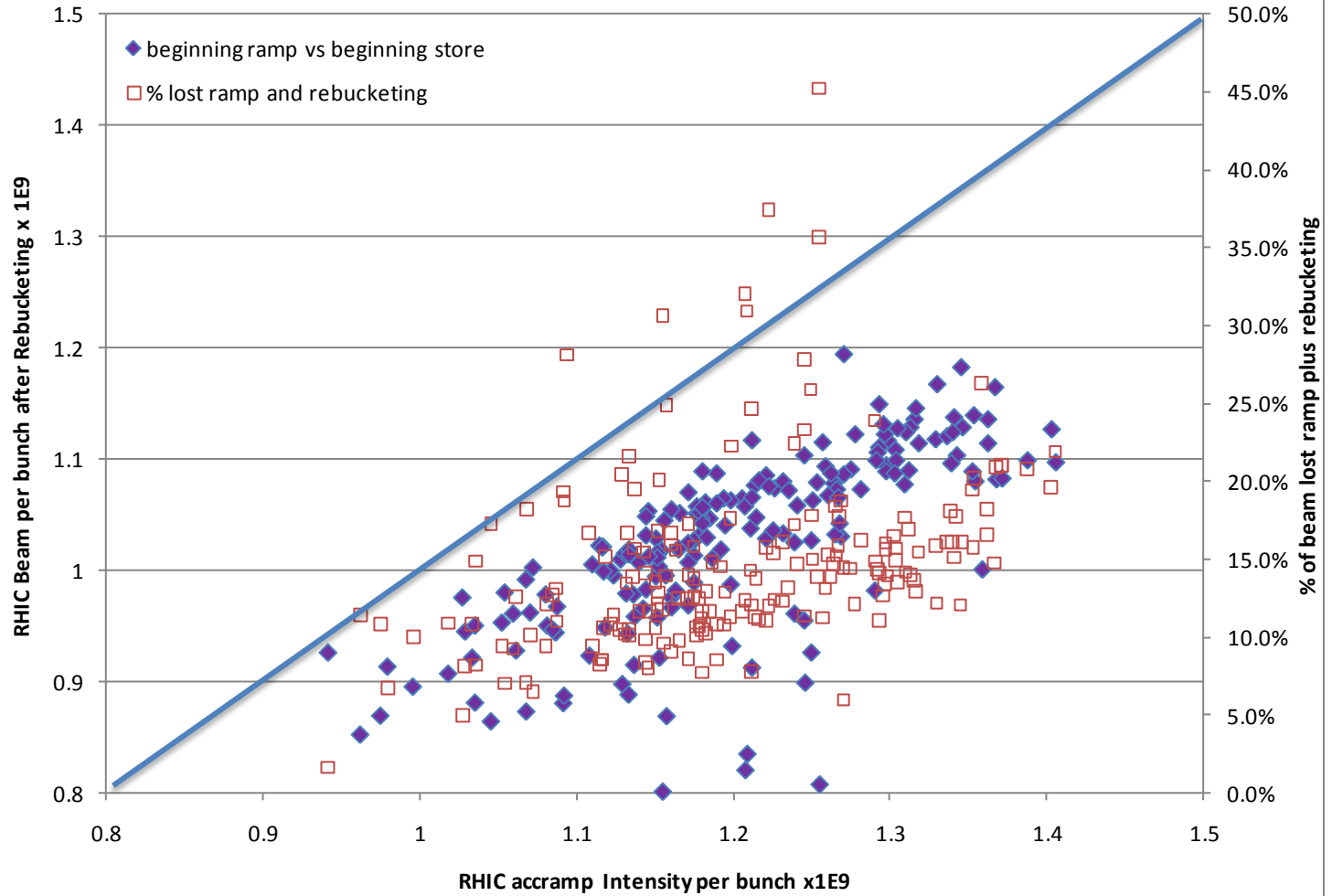


—●— RhicIpMManager.yellow\_horiz;normEmitM[.] —□— RhicIpMManager.yellow\_vert;normEmitM[.]

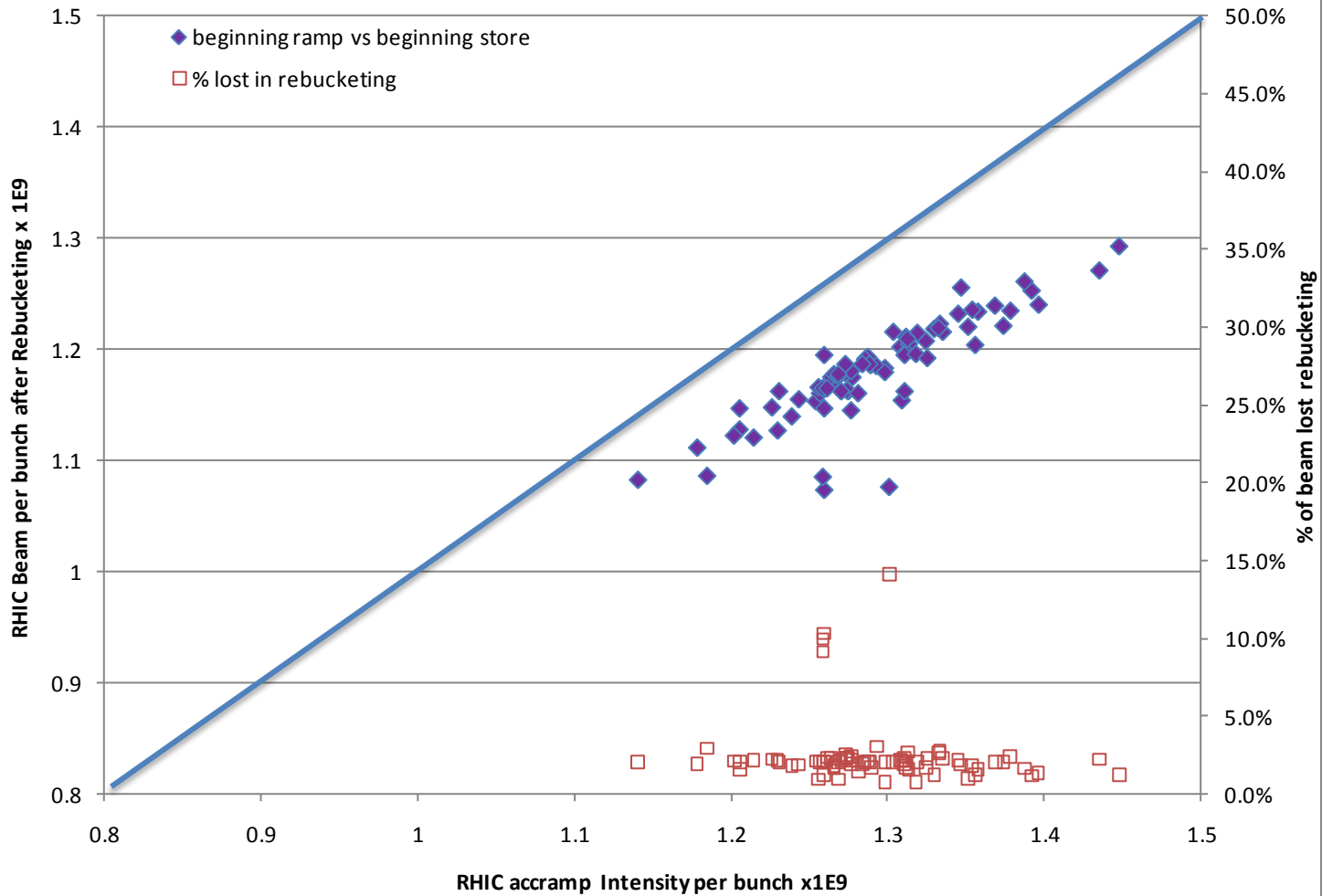
# Run 10, 62 GeV AuAu



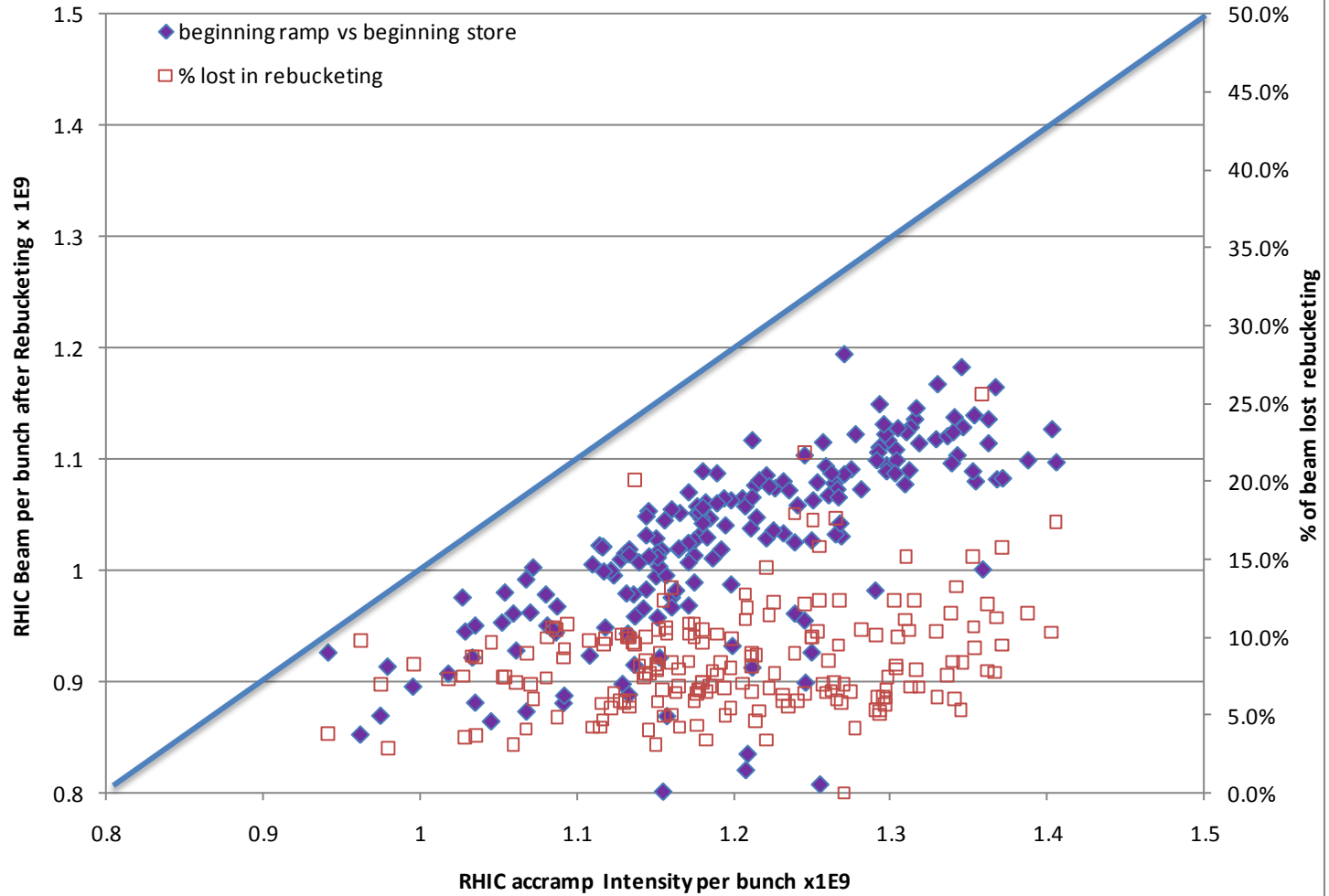
# Run 10, $\sqrt{s} = 200$ GeV AuAu



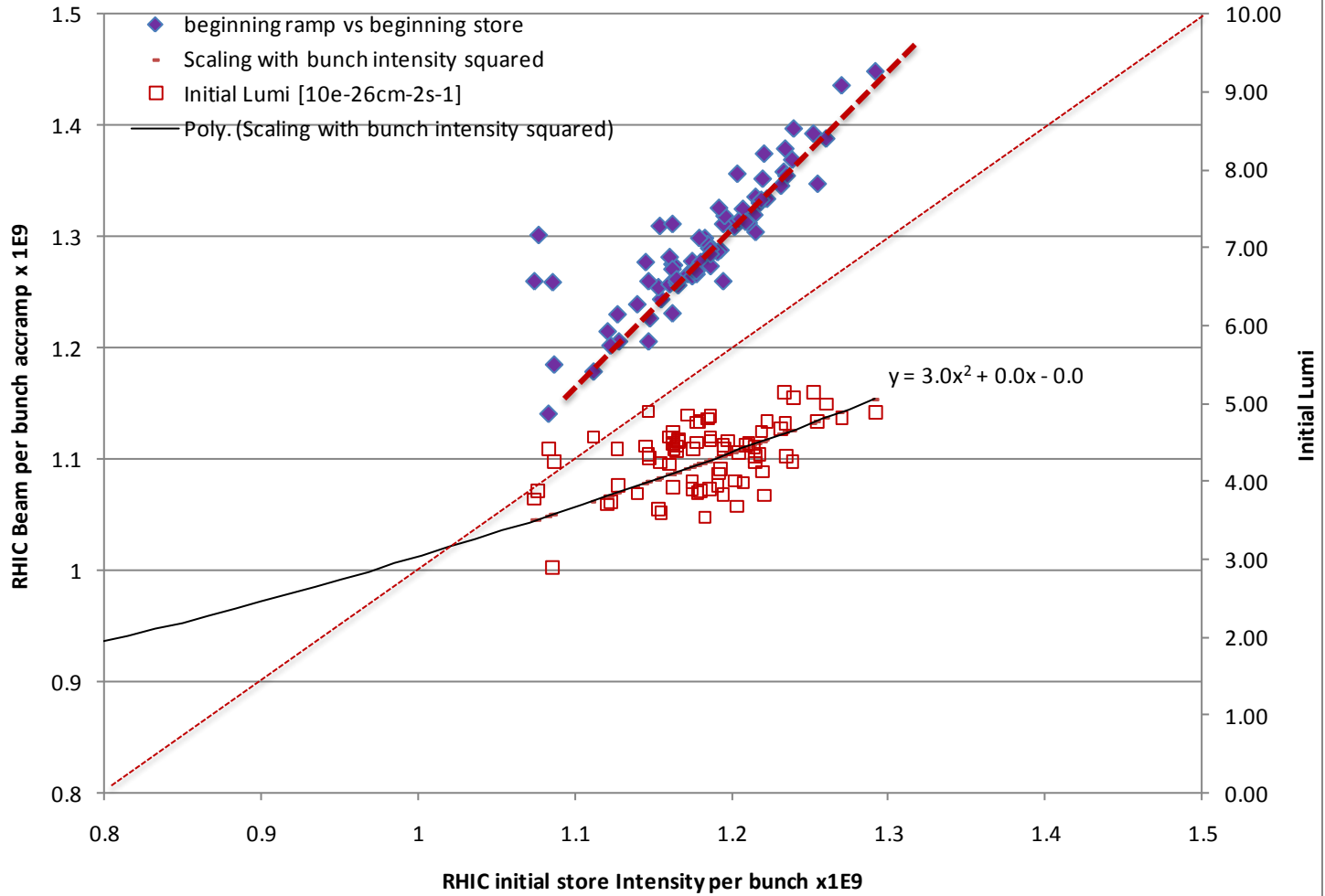
# Run 10, 62 GeV AuAu



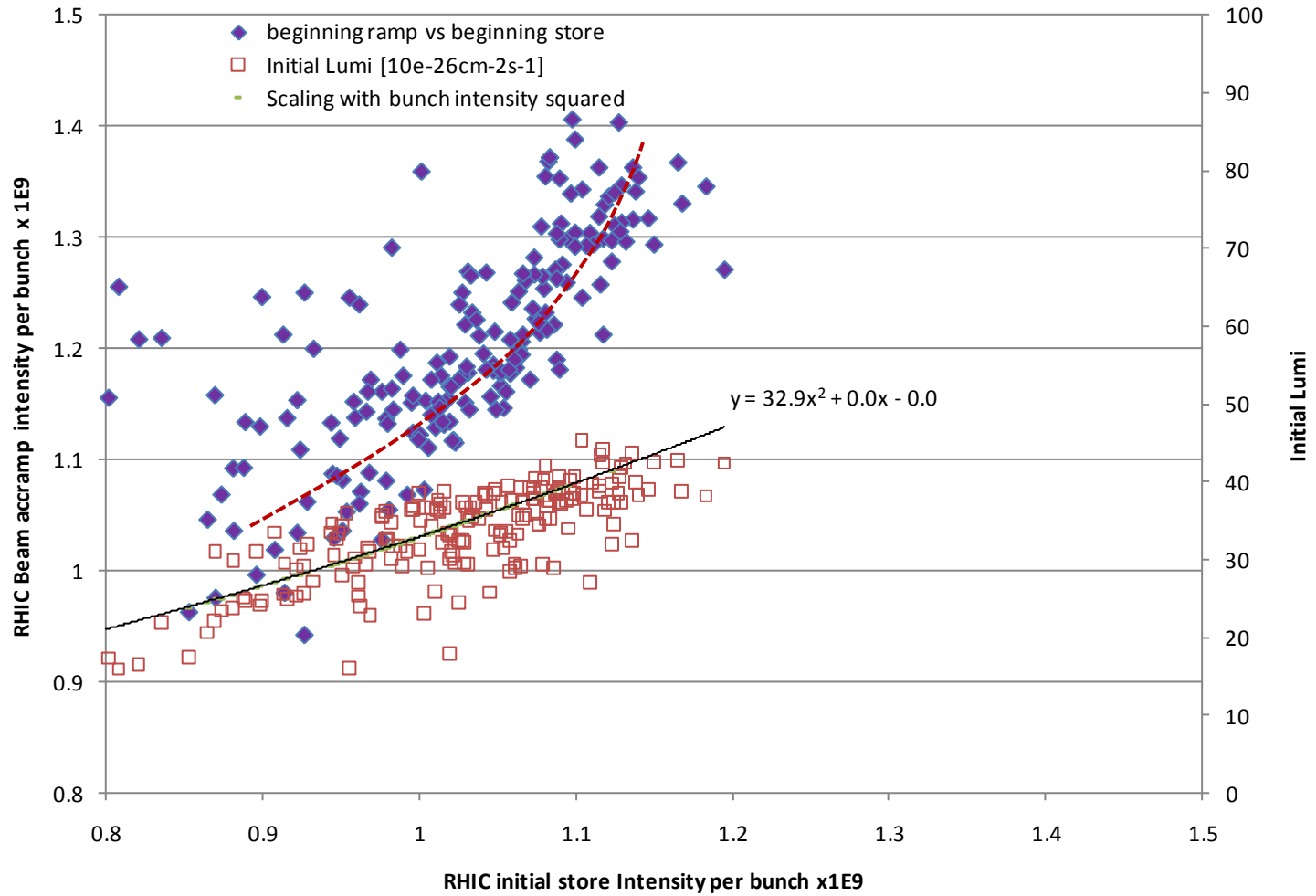
# Run 10, $\sqrt{s} = 200$ GeV AuAu



# Run 10, 62 GeV AuAu



# Run 10, $\sqrt{s} = 200$ GeV AuAu

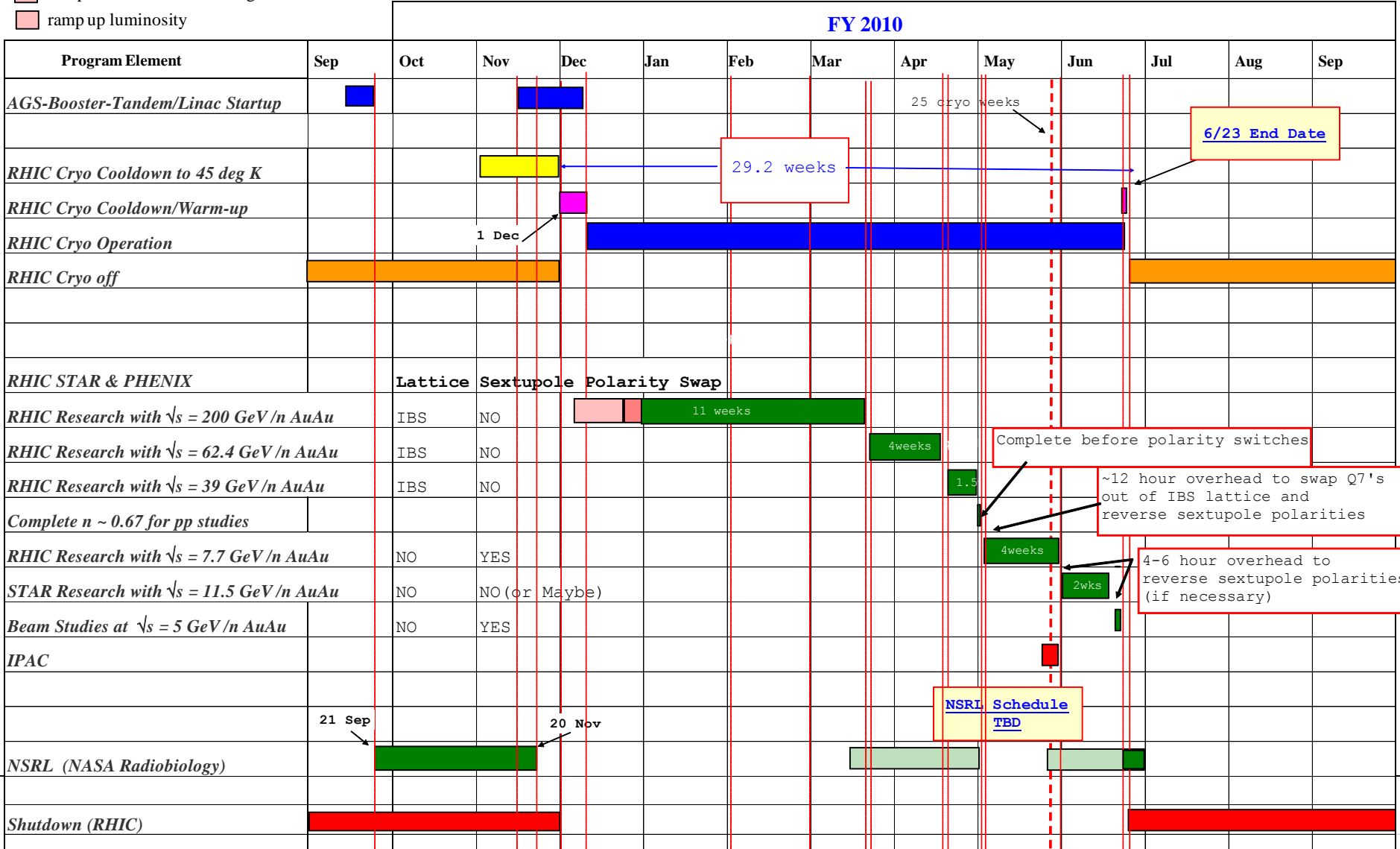




# C-A Operations-FY10

with  $\sqrt{s}=200$  extended 1 week (budget premitting)

- concurrent with RHIC
- setup with beams in both rings
- ramp up luminosity

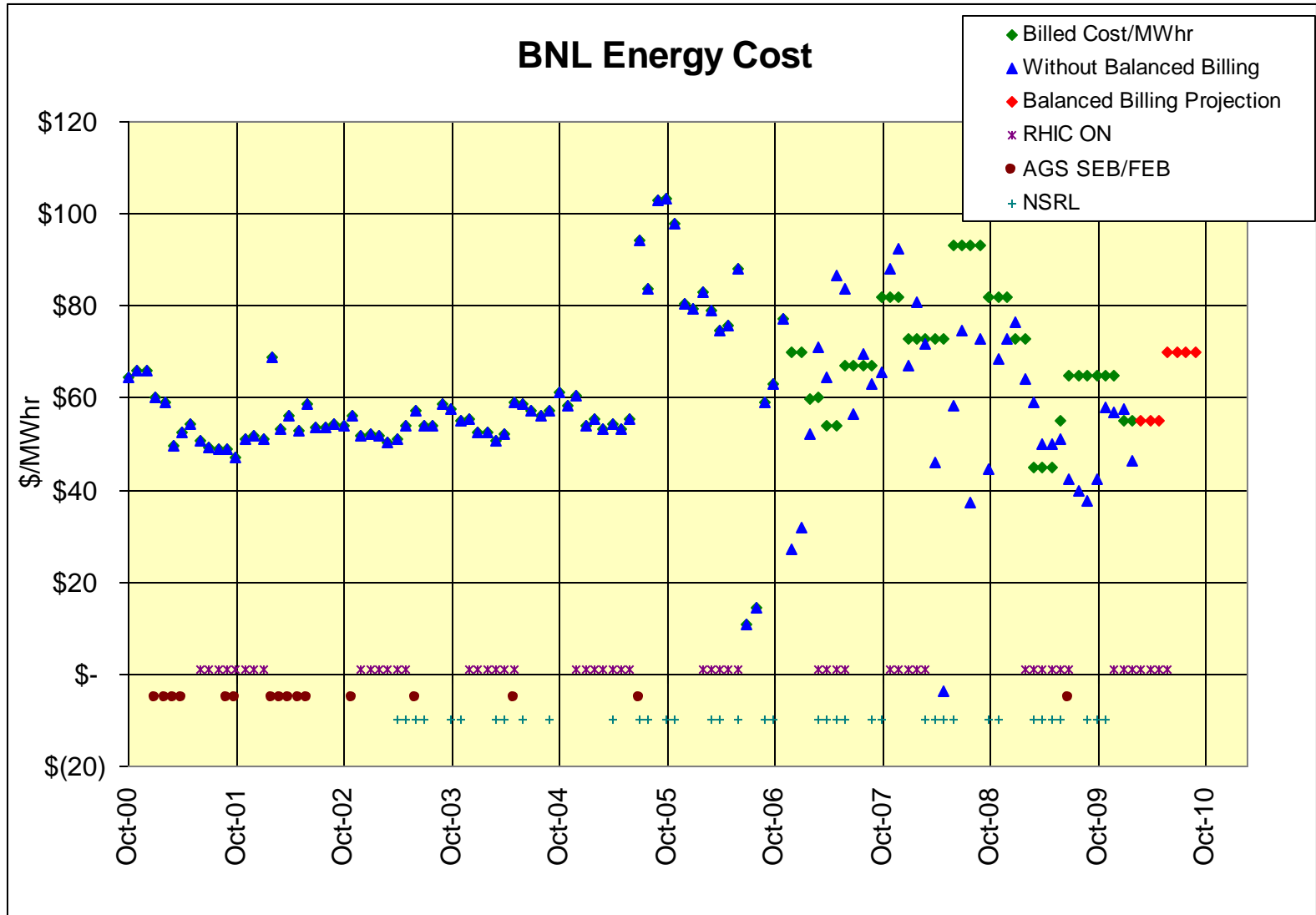


# Future Topics

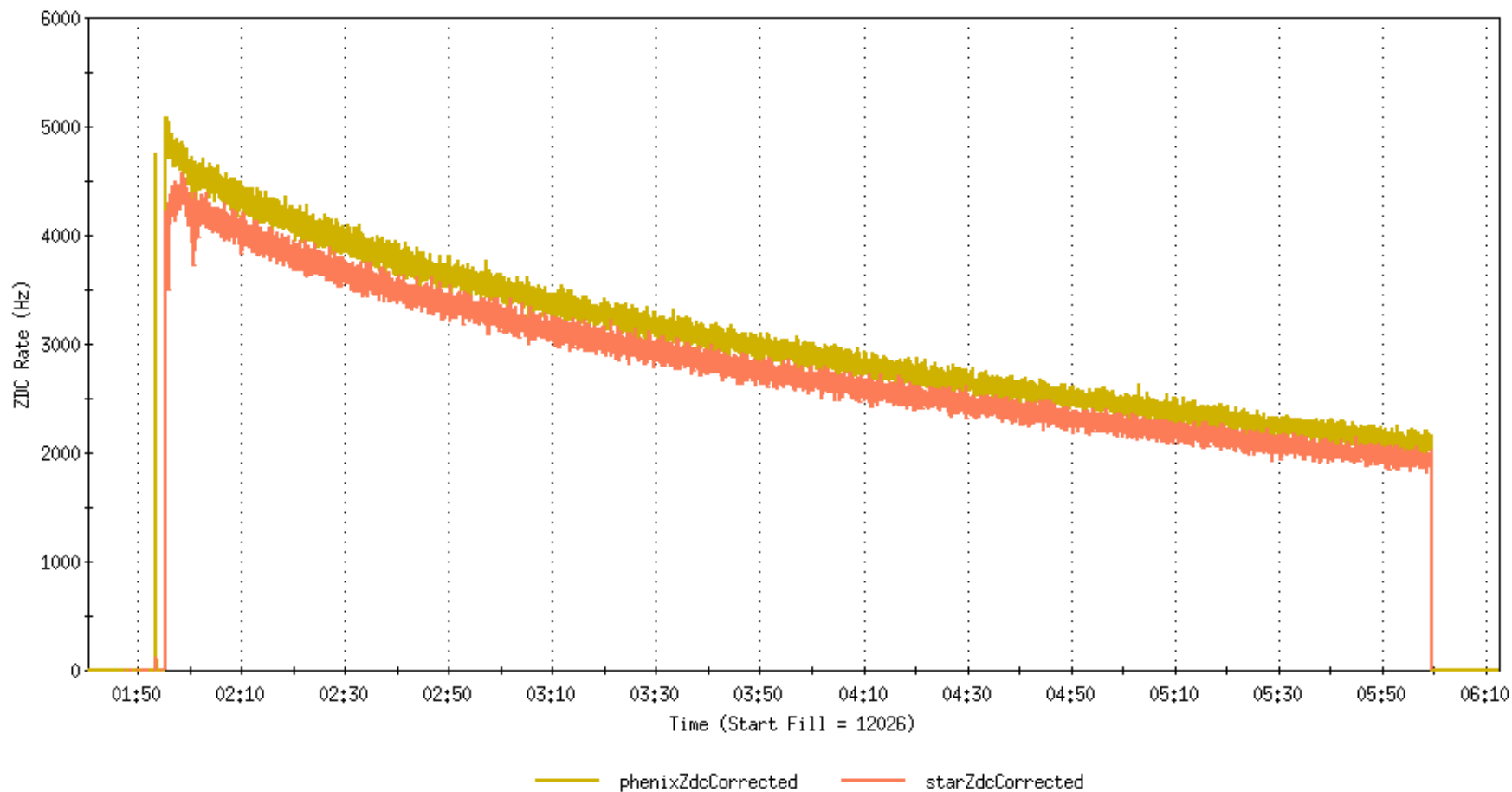
- Toward Smaller  $\beta^*$  - new quad triplets – D. Trbojevic

Archive

Through Feb 2010

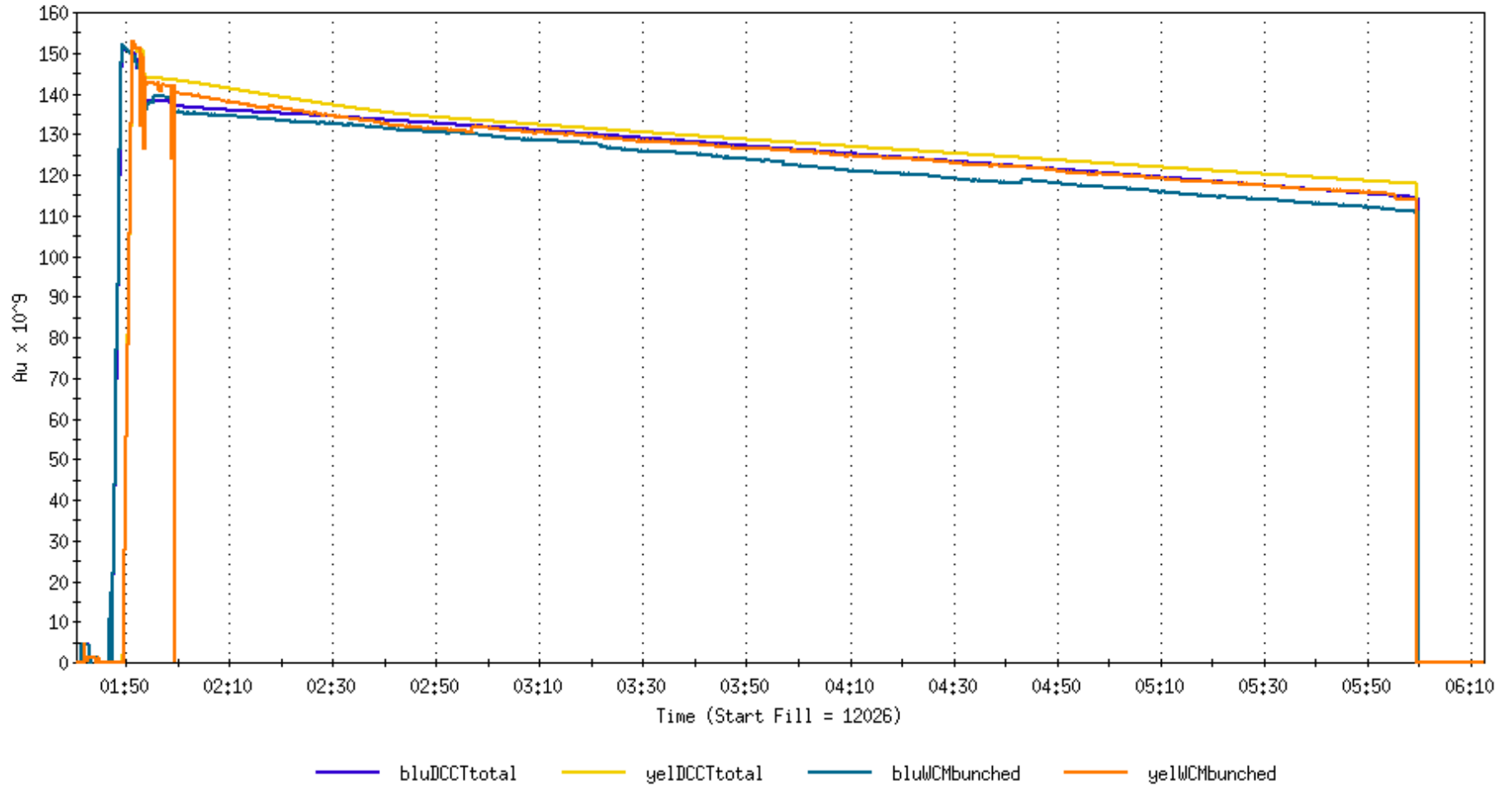


# First Store Monday, 29 March, Store 12026

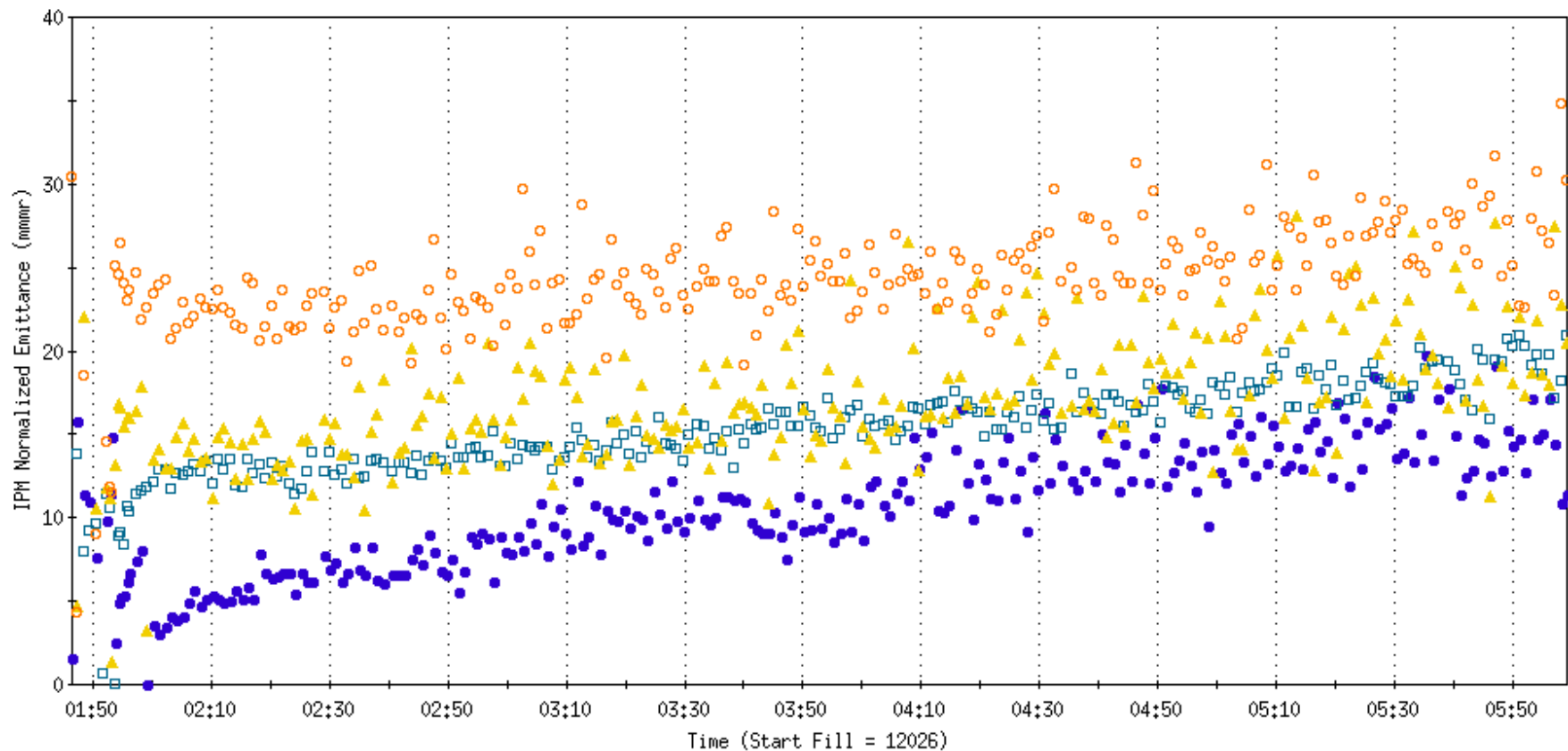


# First Store Monday, 29 March, Store 12026

RHIC - DCCT total beam & WCM bunched beam

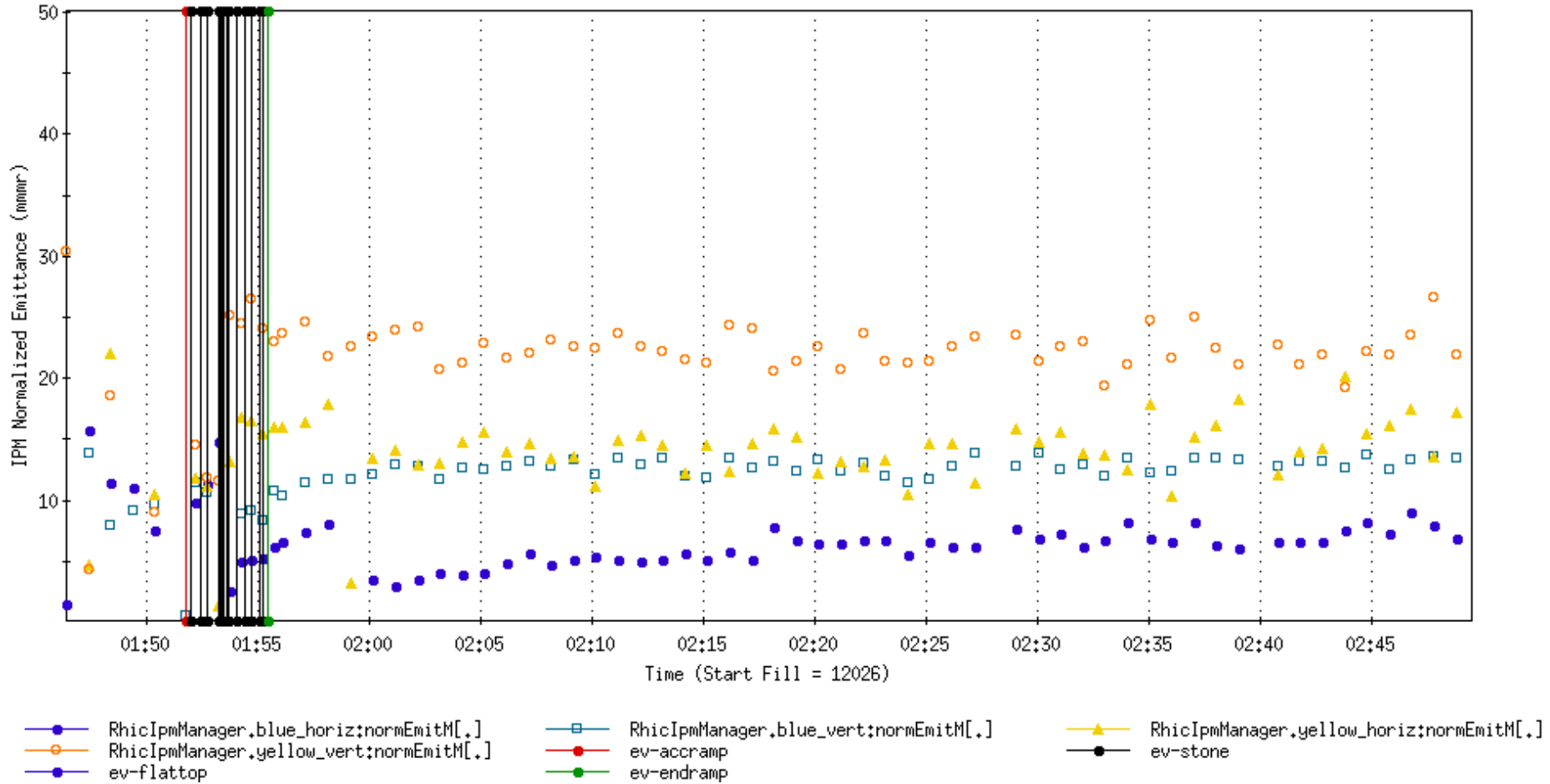


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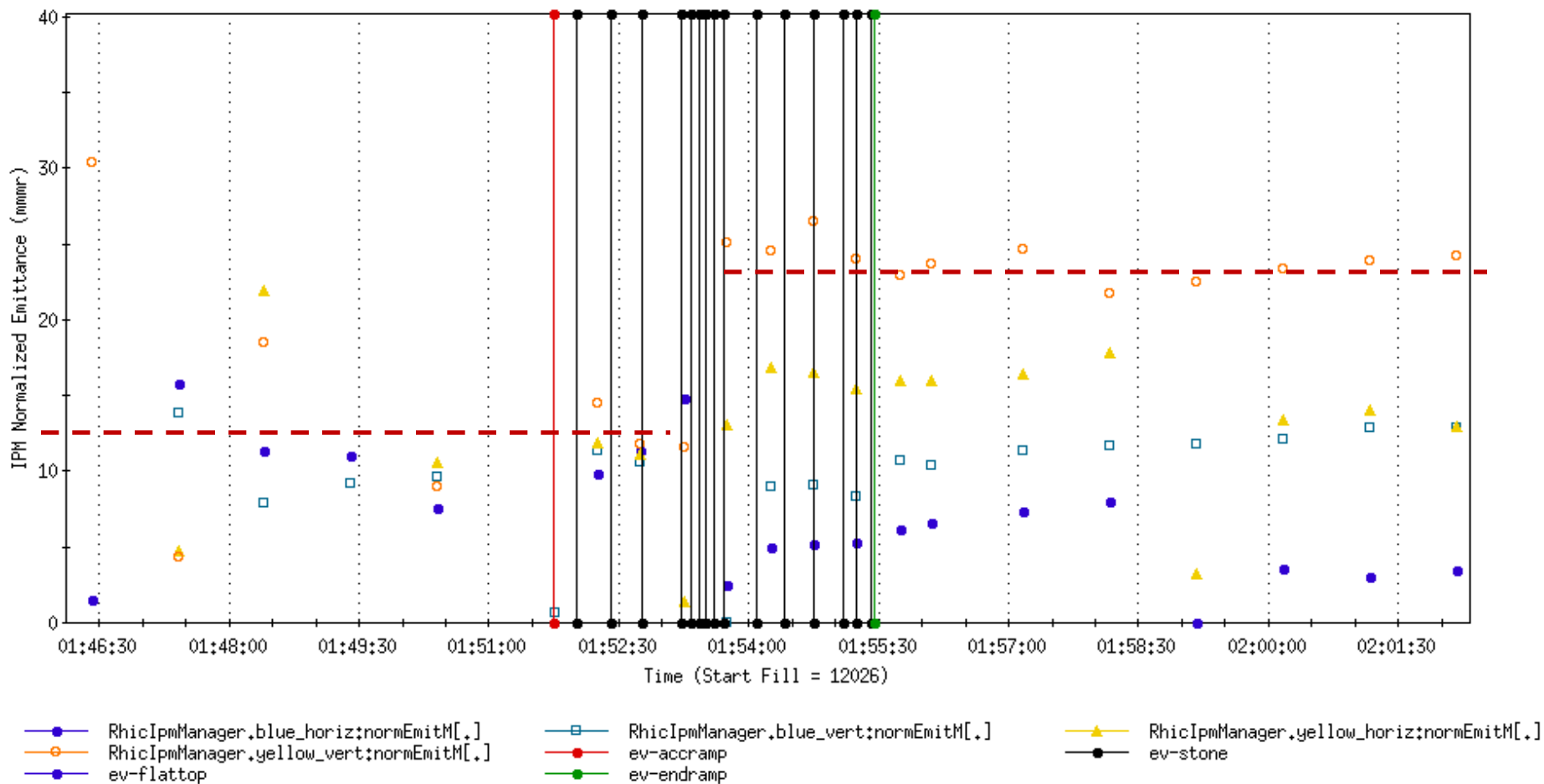
- RhicIpmManager,blue\_horiz;normEmitM[.]
- ▲ RhicIpmManager,yellow\_horiz;normEmitM[.]
- RhicIpmManager,blue\_vert;normEmitM[.]
- RhicIpmManager,yellow\_vert;normEmitM[.]

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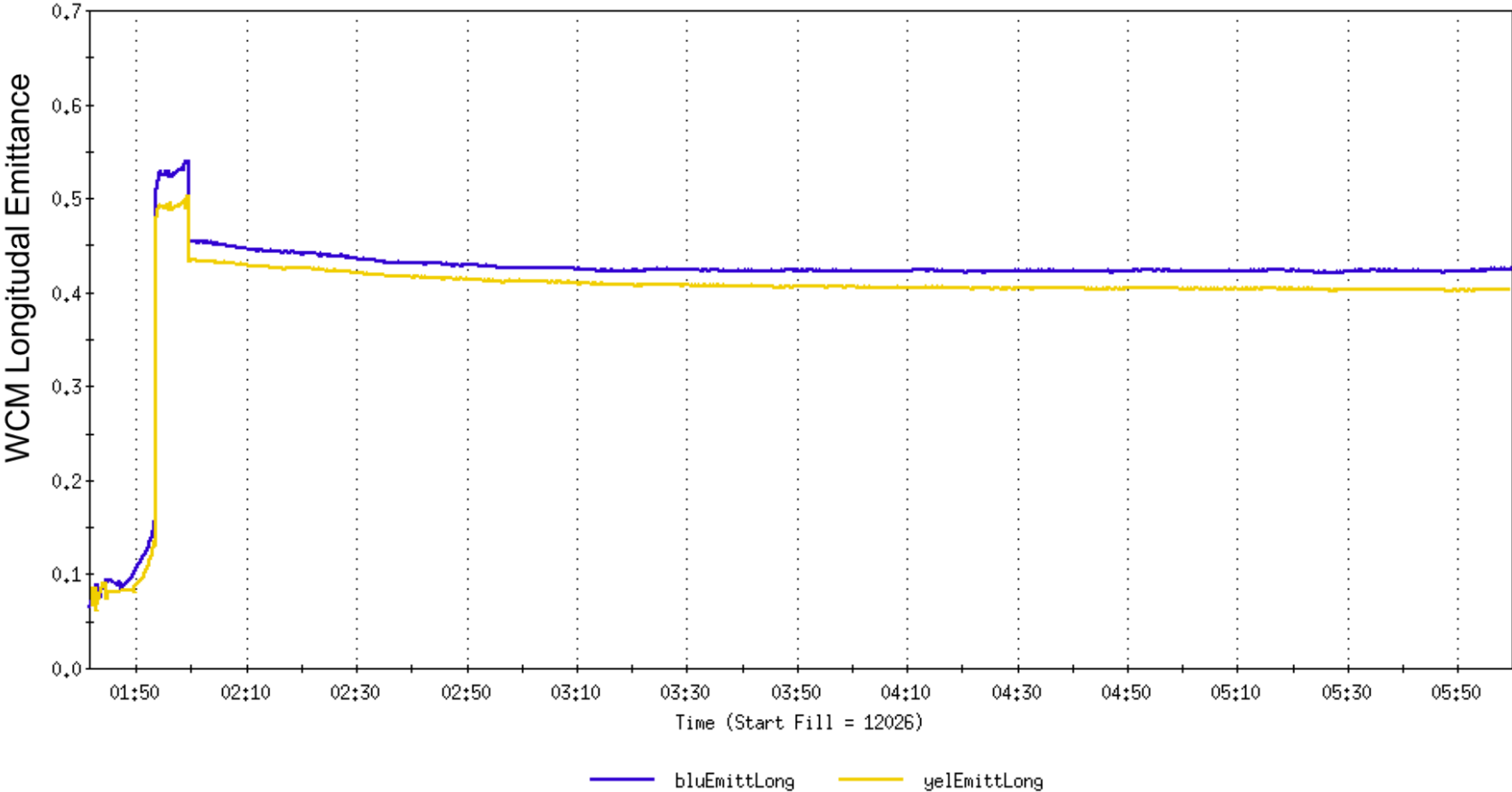


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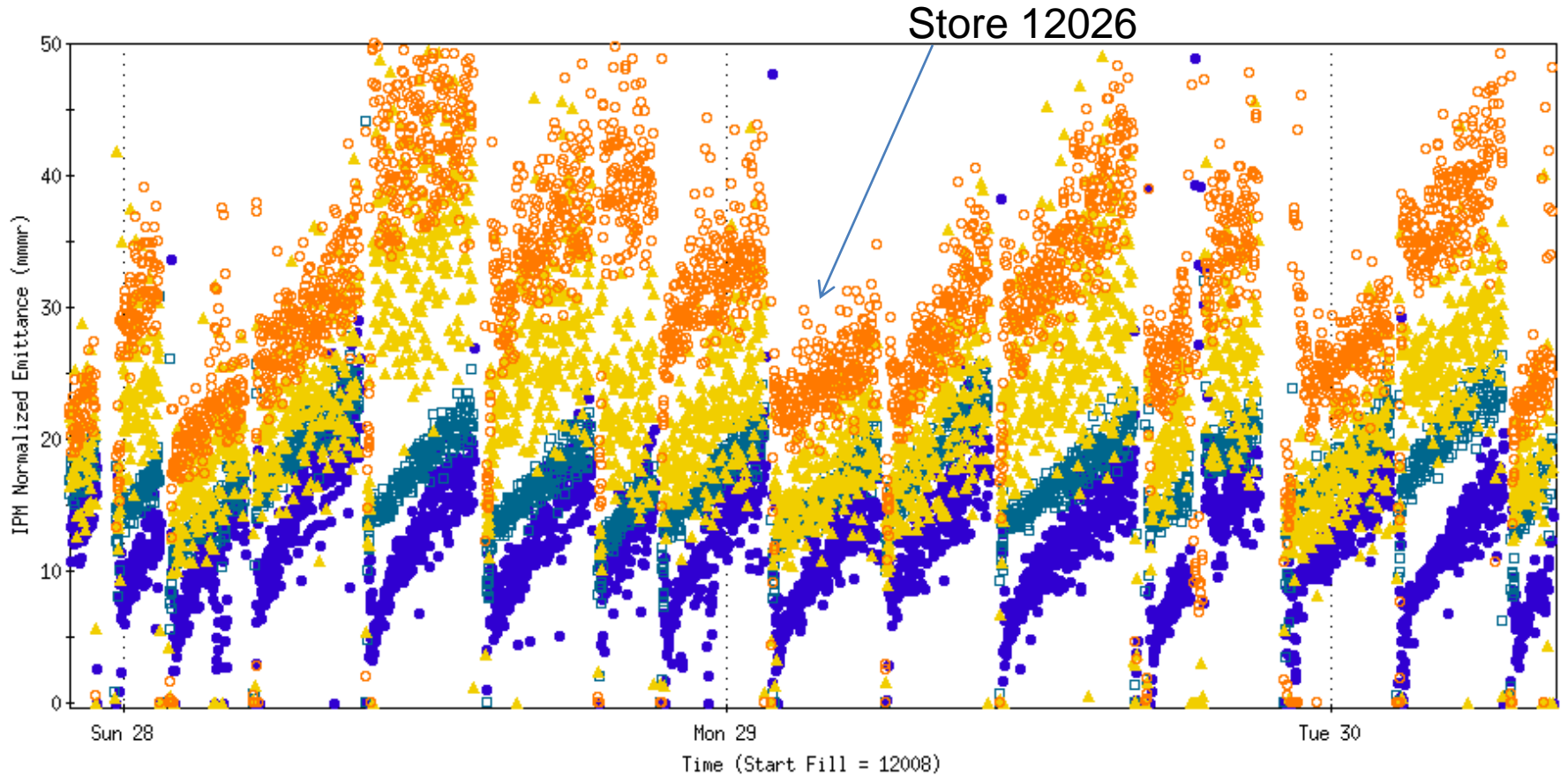


# First Store Monday, 29 March, Store 12026

Long Emitt from WCM

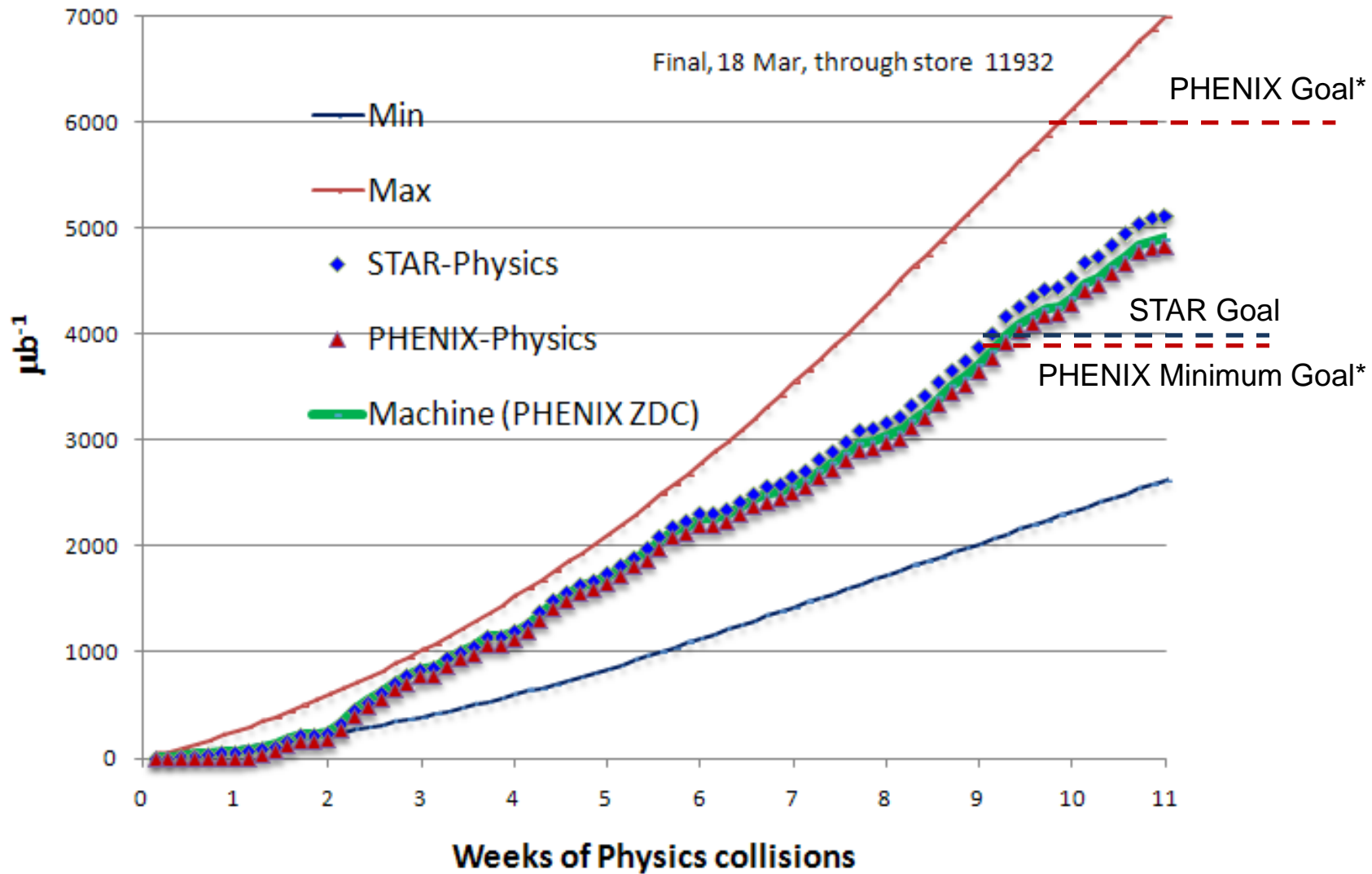


# 31 x 31 GeV/n Au horiz and vert emittances



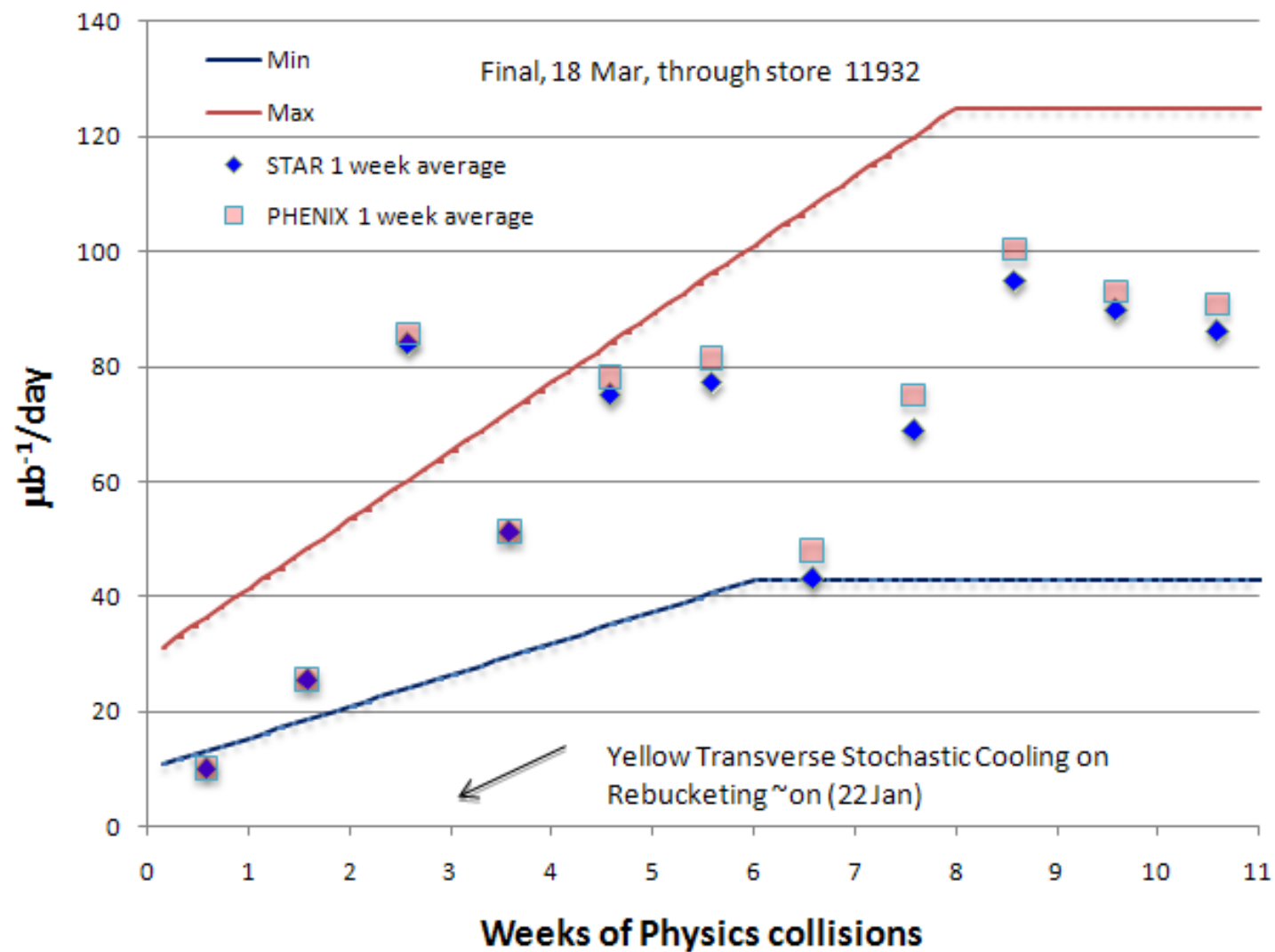
- RhicIpmManager.blue\_horiz;normEmitM[.]
- RhicIpmManager.blue\_vert;normEmitM[.]
- RhicIpmManager.yellow\_horiz;normEmitM[.]
- RhicIpmManager.yellow\_vert;normEmitM[.]

# Run 10 100 x 100 GeV/n Au Delivered Luminosity



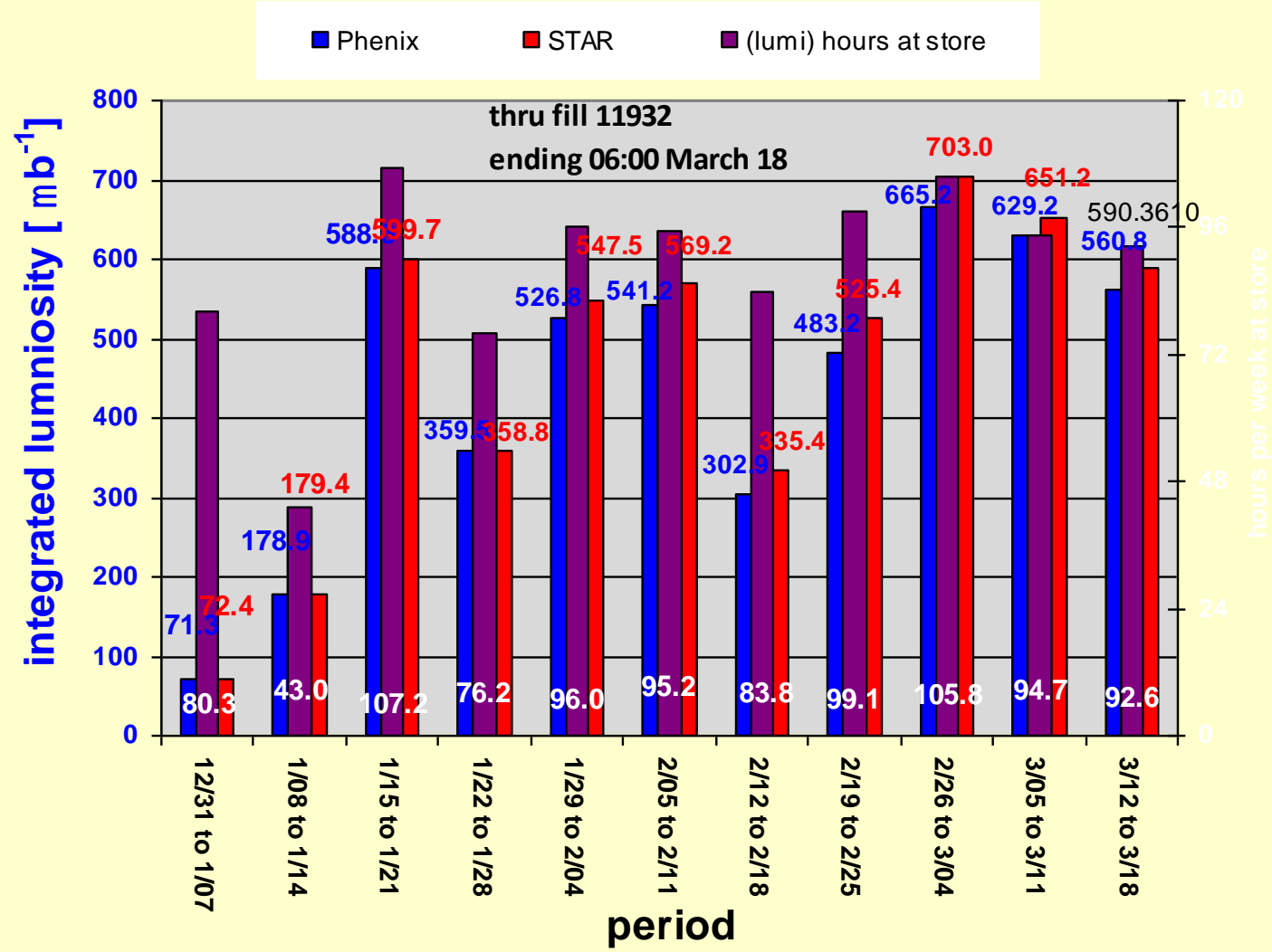
\* With 20 cm sigma IR diamond

## Run 10 100 x 100 GeV/n Au Delivered Luminosity per day

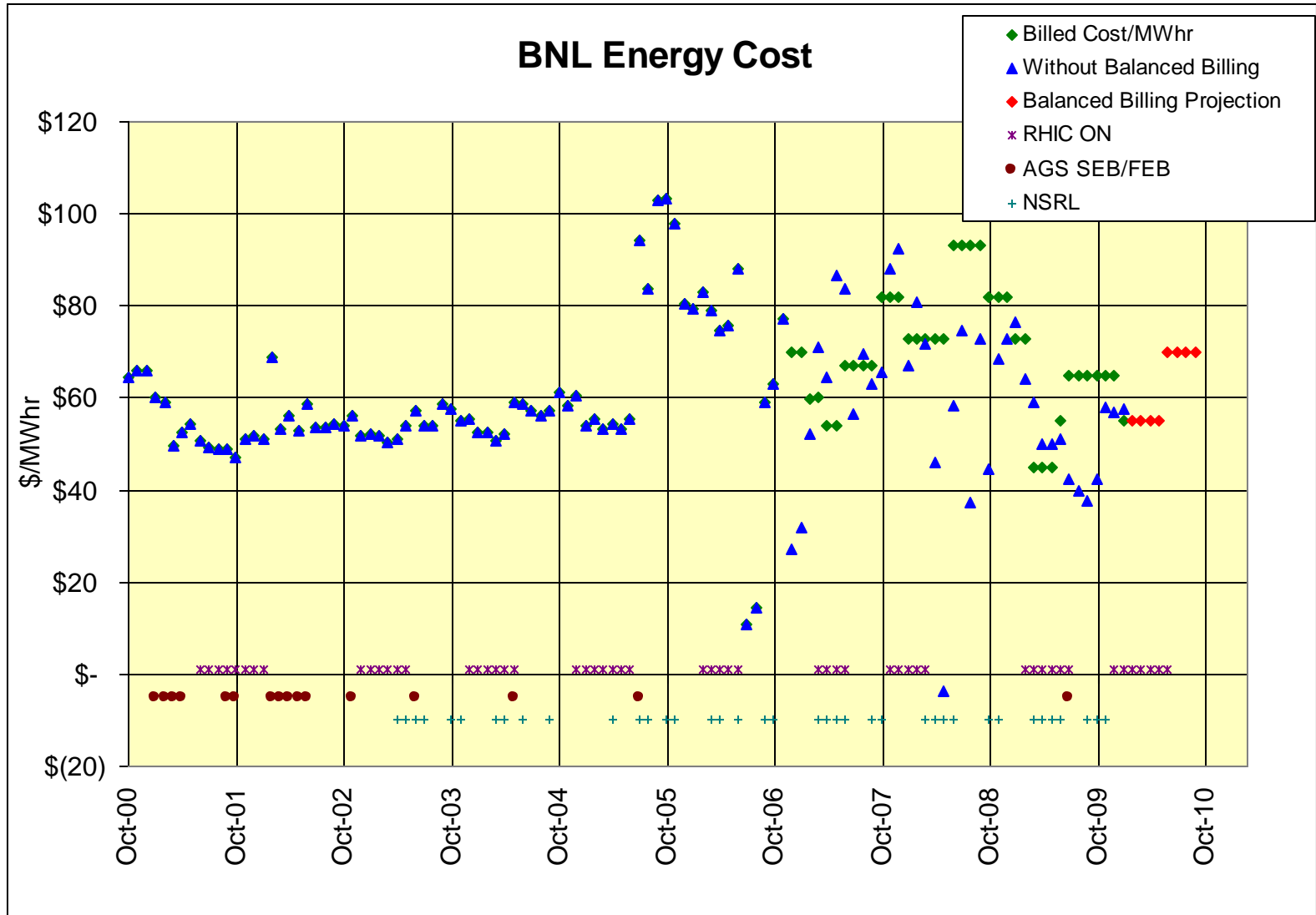


Average hours per week at store = 88.5

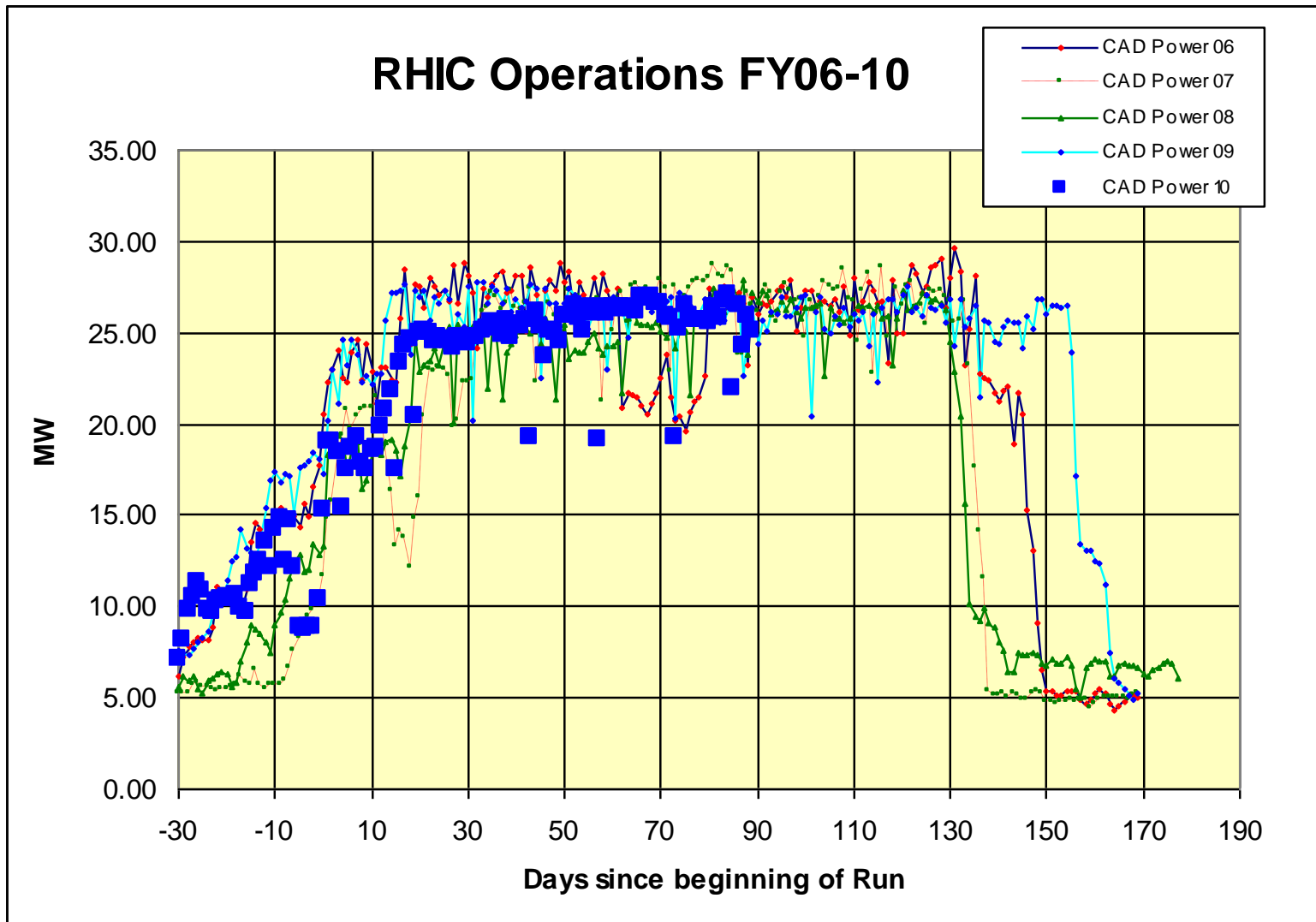
### Run 10 (AuAu) -- Integrated Luminosity by week



Through Jan 2010



Through 2/28/10





31 Dec 1<sup>st</sup> Physics Store 11340, 0.6 m  $\beta^*$  No cooling or rebucketing, STAR 3.2  $\mu\text{b}^{-1}$ , 2.6 hr store

Ring	Bunches/Cycles	Avg Bunch in RHIC (10 <sup>6</sup> ions)	Avg Efficiency XCBM to RHIC	XCBM to Uxf1	<i>Uxf1 to Wxf</i>	<i>Wxf to Arc</i>	<i>Arc to RHIC</i>
<b>Blue</b>	56/56	909	0.836	1.056	<i>0.963</i>	<i>0.992</i>	<i>0.828</i>
<b>Yellow</b>	56/56	990	0.971	1.085	<i>0.962</i>	<i>0.959</i>	<i>0.970</i>

18 Jan Physics Store 11489, 0.6 m  $\beta^*$  No cooling or rebucketing, STAR 22.6  $\mu\text{b}^{-1}$ , 3.9 hr store

Ring	Bunches/Cycles	Avg Bunch in RHIC (10 <sup>6</sup> ions)	Avg Efficiency XCBM to RHIC	XCBM to Uxf1	<i>Uxf1 to Wxf</i>	<i>Wxf to Arc</i>	<i>Arc to RHIC</i>
<b>Blue</b>	111/28	1196	0.911	1.024	<i>0.961</i>	<i>0.999</i>	<i>0.927</i>
<b>Yellow</b>	111/29	1168	0.879	1.023	<i>0.961</i>	<i>0.989</i>	<i>0.905</i>

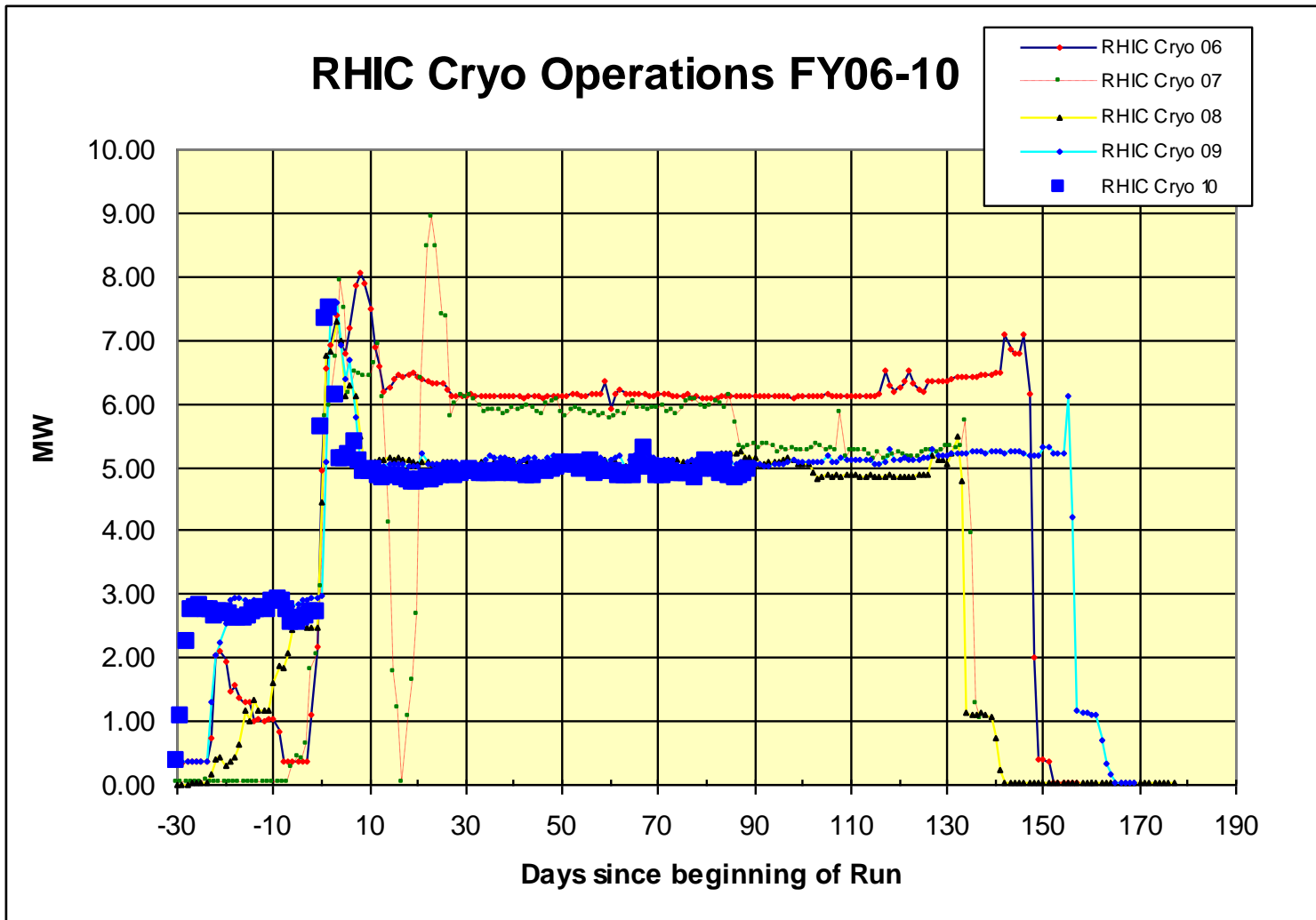
28 Feb Physics Store 11824, 0.7 m  $\beta^*$  with some cooling and with rebucketing, STAR 32.7  $\mu\text{b}^{-1}$ , 3.9 hr store

Ring	Bunches/Cycles	Avg Bunch in RHIC (10 <sup>6</sup> ions)	Avg Efficiency XCBM to RHIC	XCBM to Uxf1	<i>Uxf1 to Wxf</i>	<i>Wxf to Arc</i>	<i>Arc to RHIC</i>
<b>Blue</b>	111/28	1262	0.917	0.975	<i>0.961</i>	<i>1.001</i>	<i>0.977</i>
<b>Yellow</b>	111/28	1246	0.910	0.961	<i>0.964</i>	<i>0.988</i>	<i>0.994</i>

2 Mar Physics Store 11834, 0.7 m  $\beta^*$  with some cooling and with rebucketing, STAR 29.4  $\mu\text{b}^{-1}$ , 3.9 hr store)

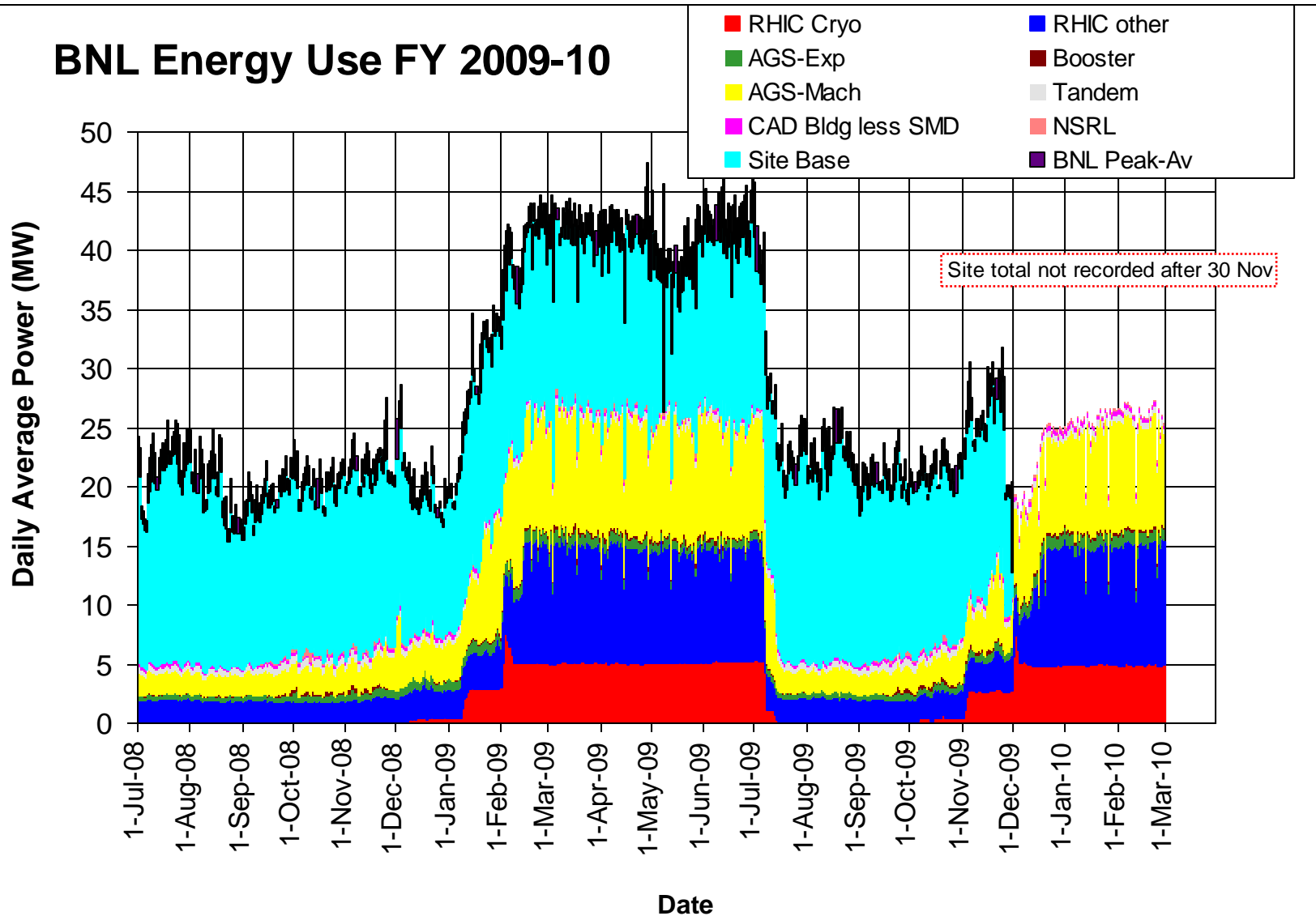
Ring	Bunches/Cycles	Avg Bunch in RHIC (10 <sup>6</sup> ions)	Avg Efficiency XCBM to RHIC	XCBM to Uxf1	<i>Uxf1 to Wxf</i>	<i>Wxf to Arc</i>	<i>Arc to RHIC</i>
<b>Blue</b>	111/28	1354	0.927	0.990	<i>0.965</i>	<i>1.003</i>	<i>0.968</i>
<b>Yellow</b>	111/28	1377	0.931	0.990	<i>0.964</i>	<i>0.989</i>	<i>0.987</i>

Through 2/28/10



Through 2/28/10

# BNL Energy Use FY 2009-10



## Revised Run 10 Plan, Nov 25, 2009

$\sqrt{s_{NN}}$ (GeV)	Physics production or beam studies weeks	
	25-cryoweek run	27-cryoweek run
200	10	10
62.4	4	4
39	1.5	1.5
27	0	0
18	0	0
11.5 @ STAR	0	2
7.7	4	4
Beam studies @ 5 GeV and @ $v \approx 0.67$	0.5	0.5

# Run 10 Au-Au Goals

11/19/09

- STAR

- $\sqrt{s} = 200 \text{ GeV/n}$

- Luminosity Sampled/Delivered = 2/4 nb<sup>-1</sup>
    - 250M Central Events
    - 300M Min-bias events

- PHENIX

- $\sqrt{s} = 200 \text{ GeV/n}$

- Luminosity Recorded/Delivered = 1.4/>6 nb<sup>-1</sup>
    - Minimum Goal:
      - Luminosity Recorded/Delivered = 1.1/3.9 nb<sup>-1</sup>

Time from start of 4.5 deg cooldown to Physics

