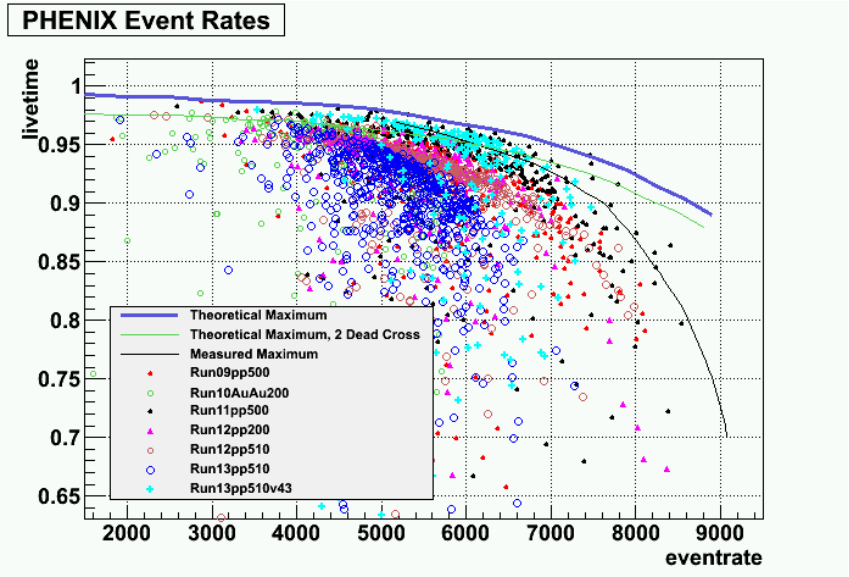
# PHENIX status

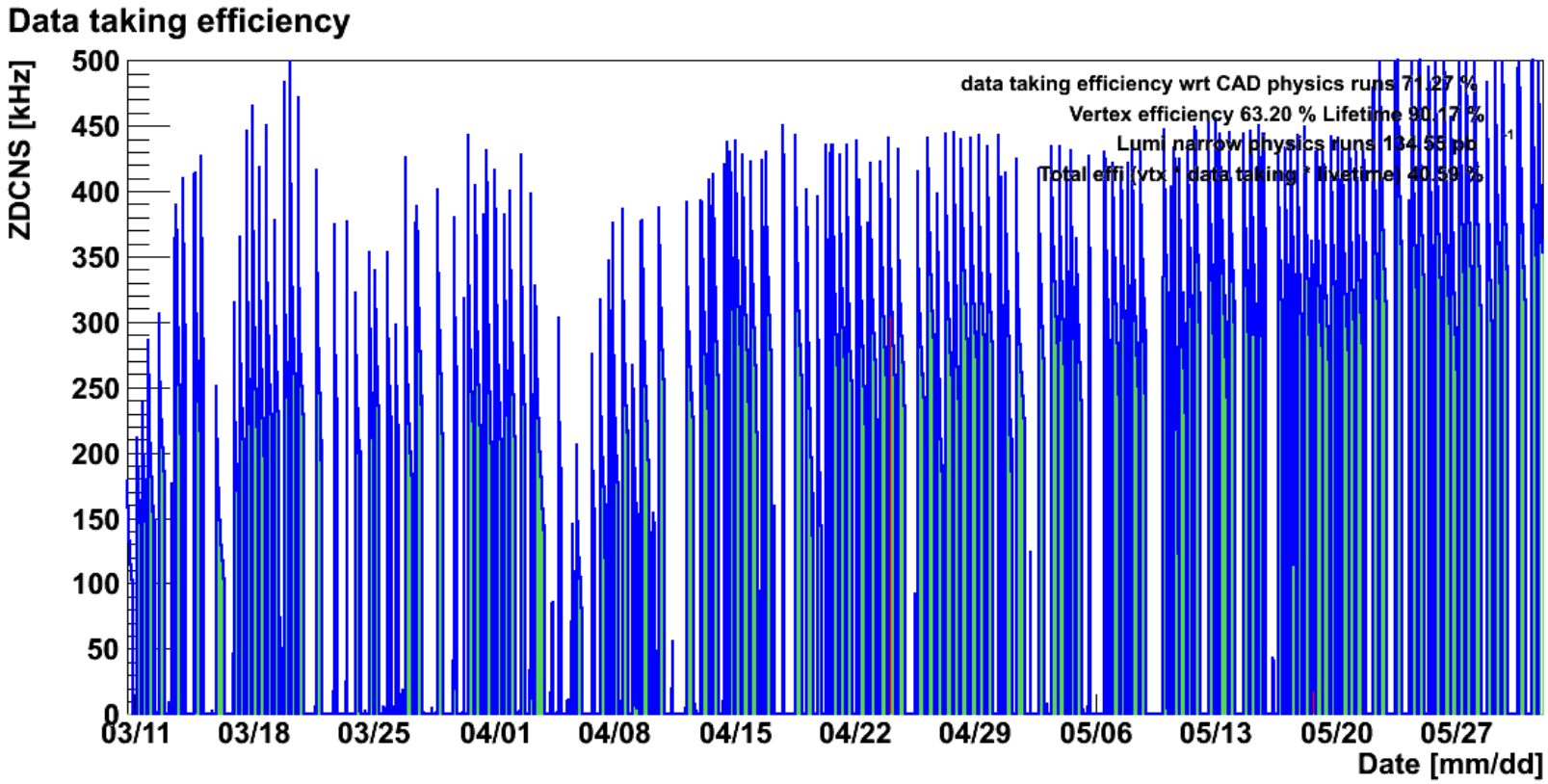
Ralf Seidl (RIKEN)

# DAQ improvements (Mickey)

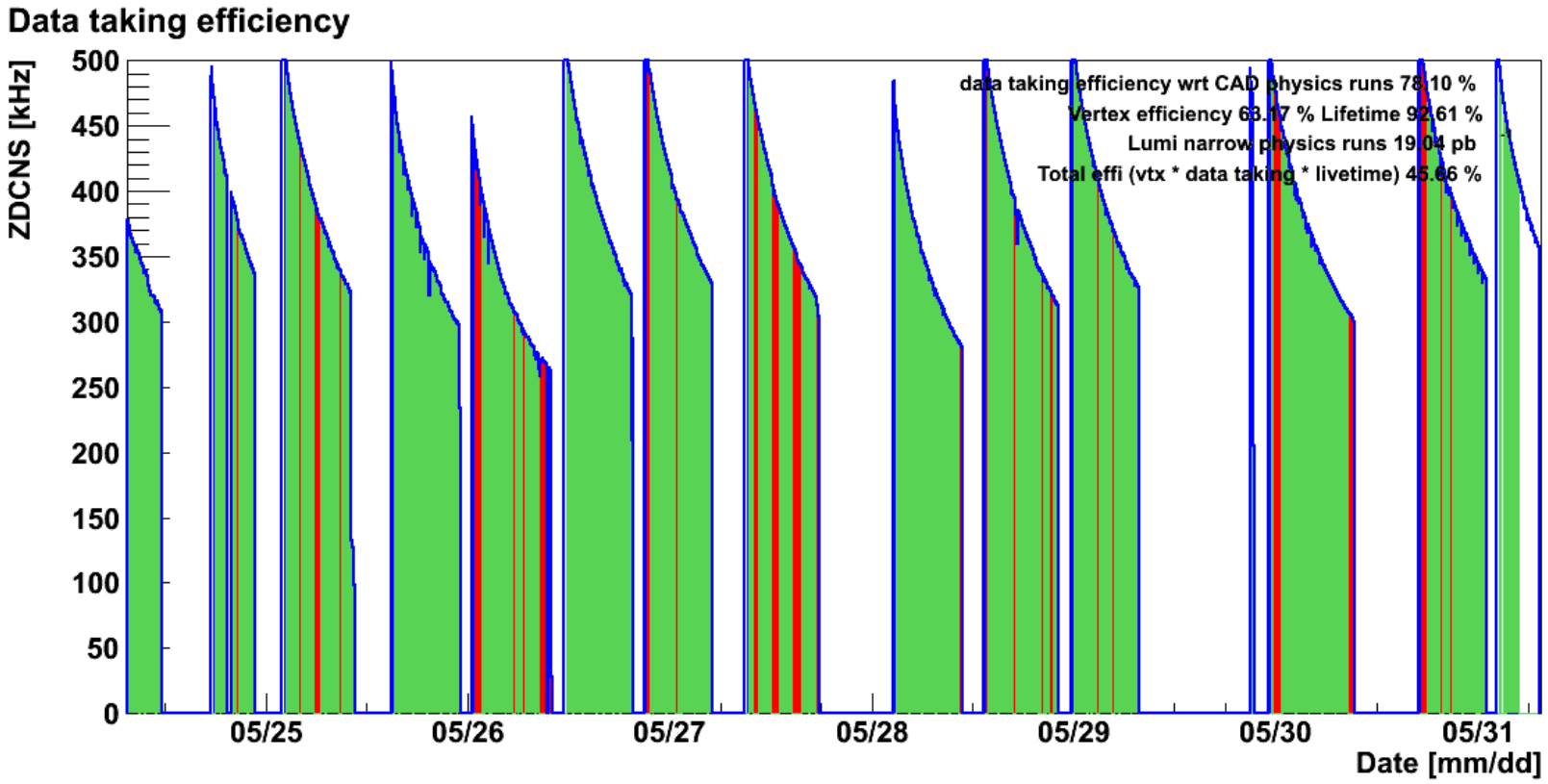



- Identified bottle necks in data acquisition and successively removed them:
  - Removed unnecessary busy signals
  - Replaced older event builders
  - Split data stream for highest volume packets
- Average rate improved by ~1KHz (substantial improvement for prescaled triggers for $\Delta G$ program)

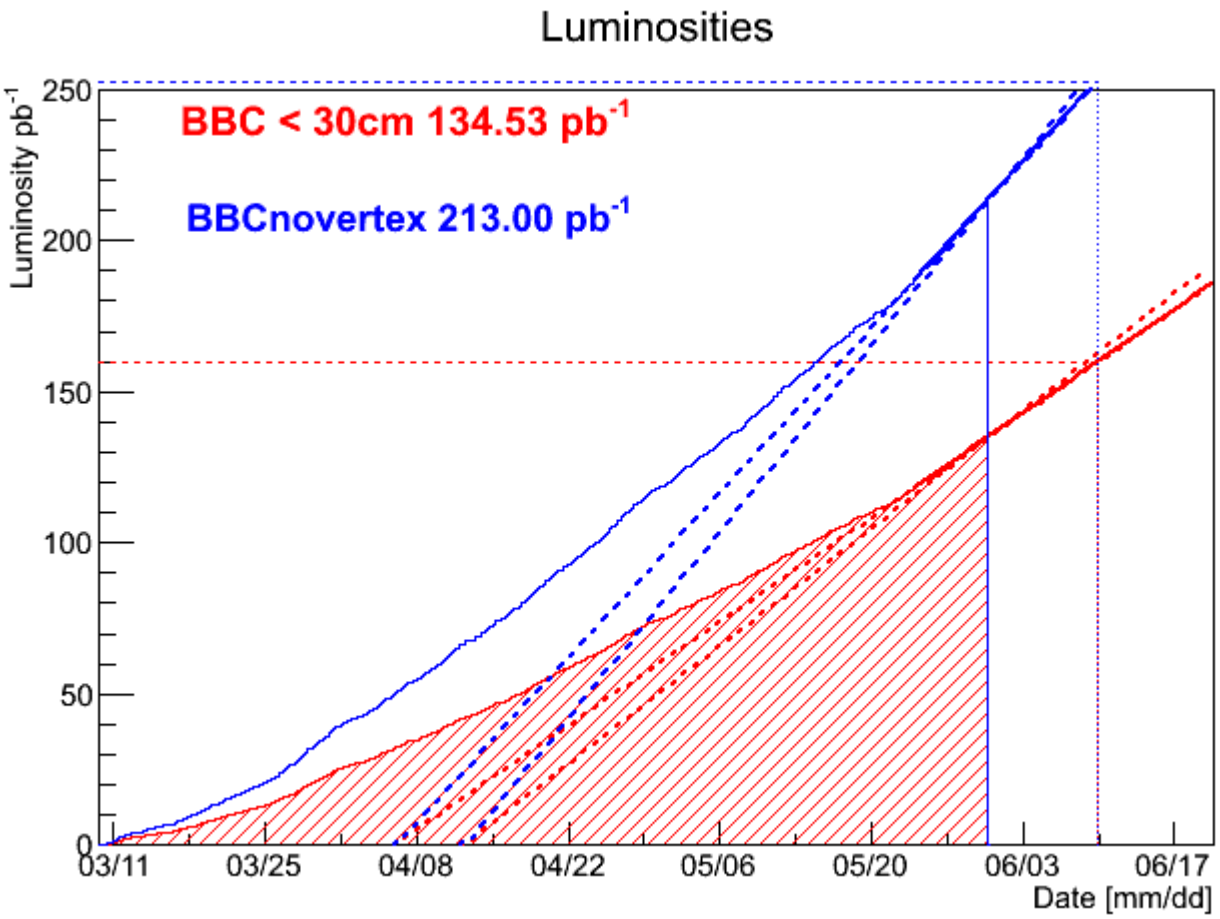
# Total efficiencies



# Last week


Data taking efficiency
ZDCNS [kHz]
500
450
400
350
300
250
200
150
100
50
0
05/25
05/26
05/27
05/28
05/29
05/30
05/31
Date [mm/dd]
data taking efficiency wrt CAD physics runs 78.10 %
Vertex efficiency 63.17 % Lifetime 92.61 %
Lumi narrow physics runs 19.04 pb
Total effi (vtx * data taking * livetime) 45.66 %

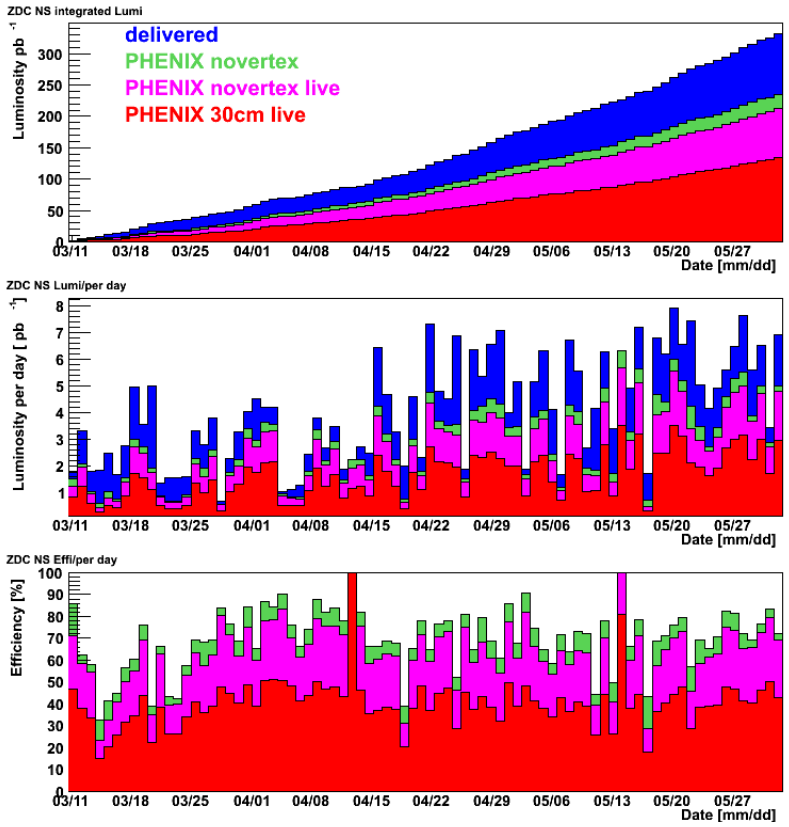
# Projections



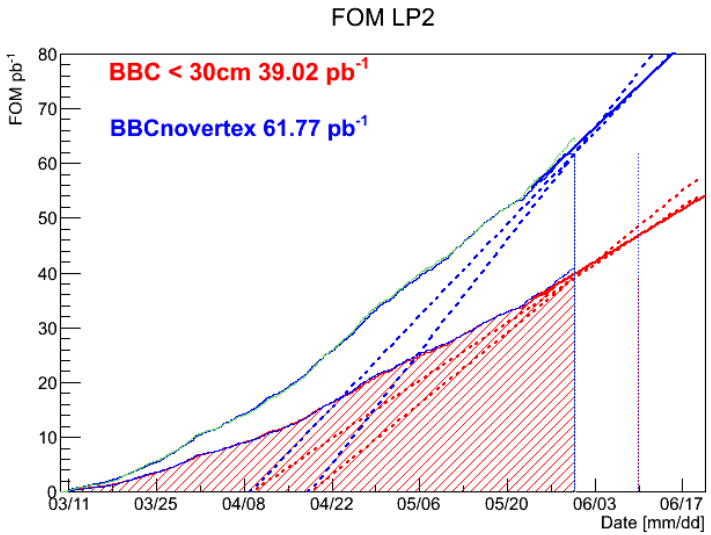

Best 3 days (last weekend)

Last week

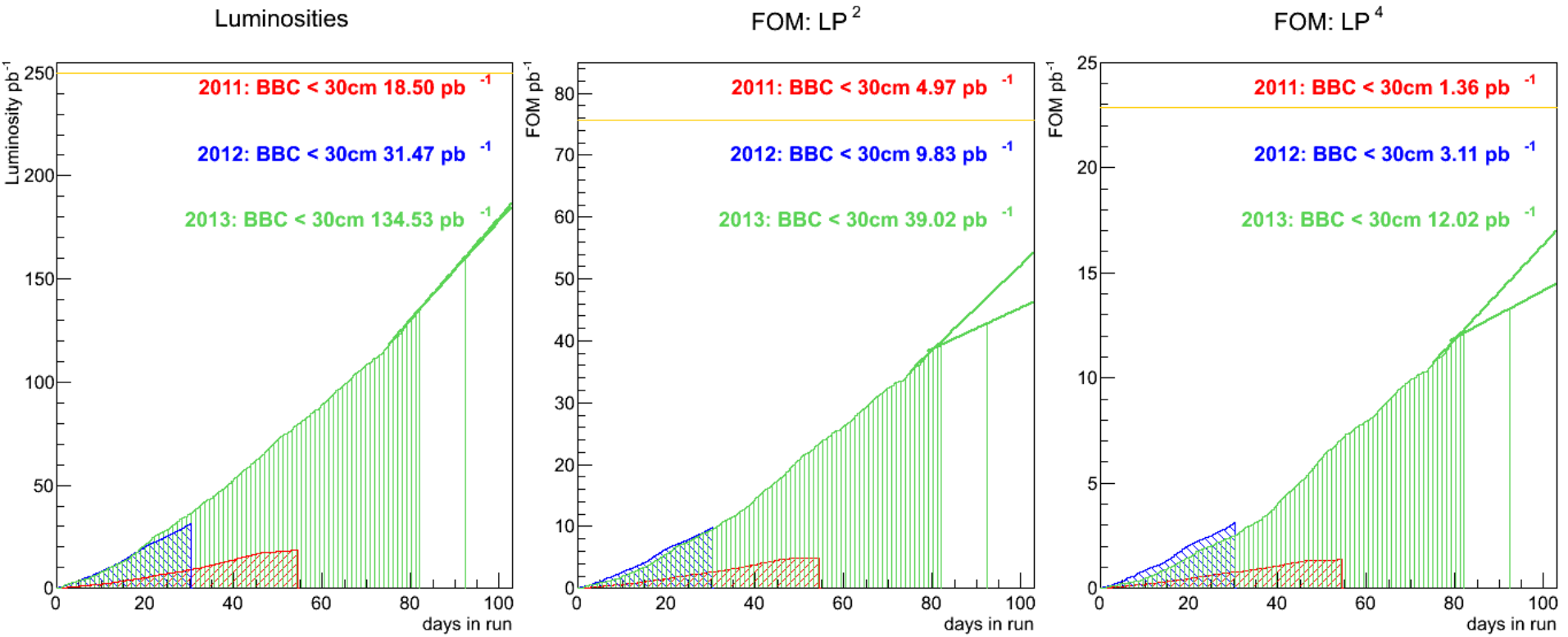
# Efficiencies vs day




- Weekly modulation seen
- Making reasonable progress



# Luminosities vs Years



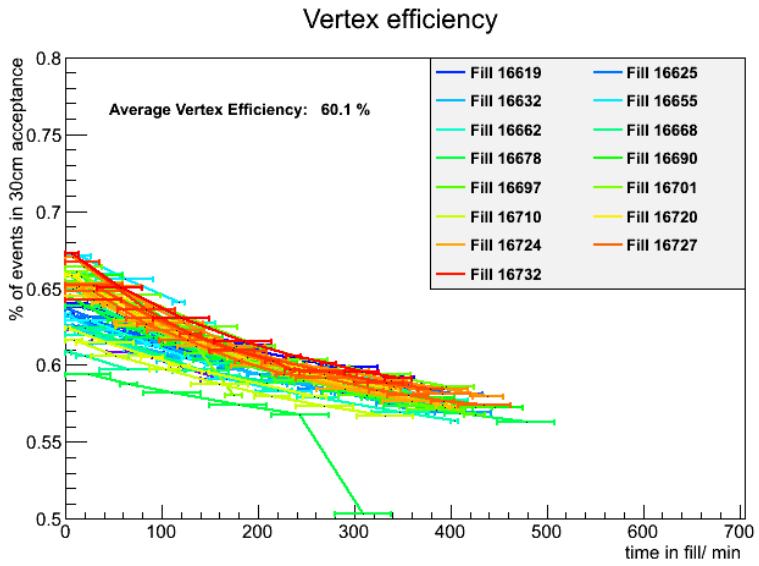

CNI by Fill results in Collision shown, weighted fill-by-fill

Projections until end of run:

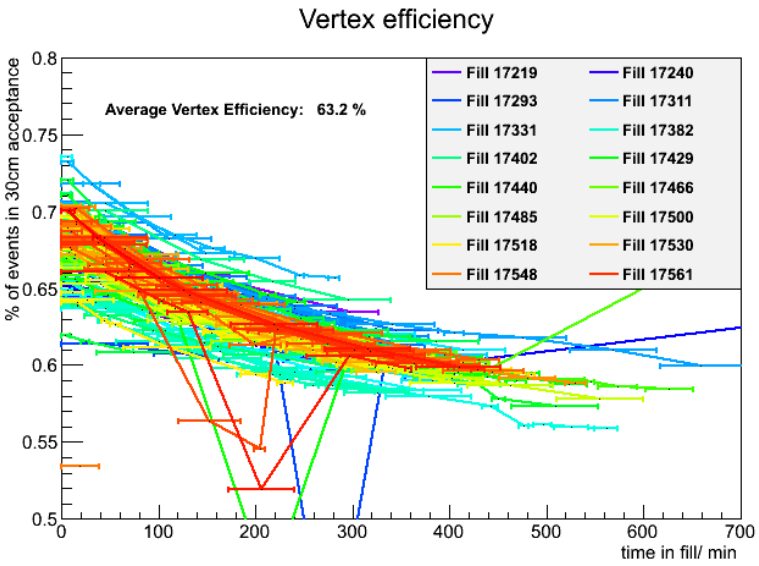
- ~60% of luminosity goal
- ~66% of LP2 goal
- ~70% of LP4 goal

# Vertex distribution

**Run12 vertex efficiency (30 cm vs novertex)**

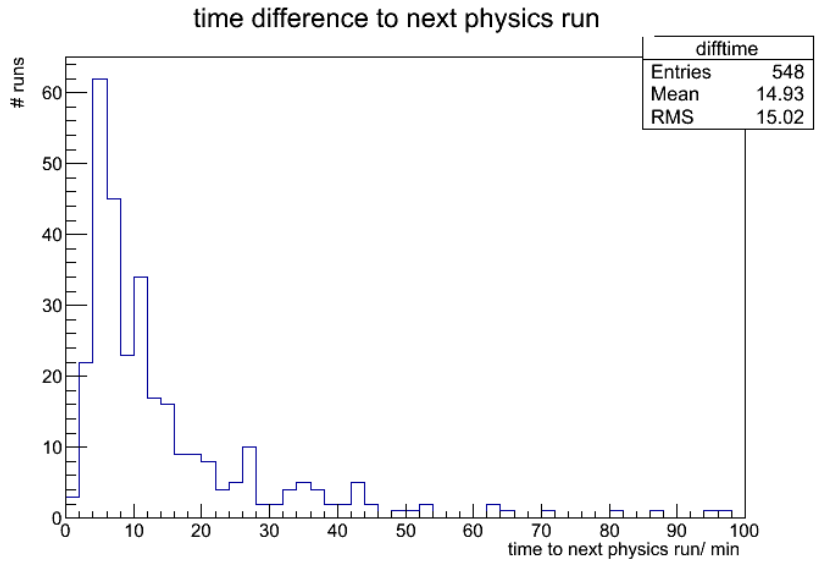



**Run13 vertex efficiency (30 cm vs novertex)**

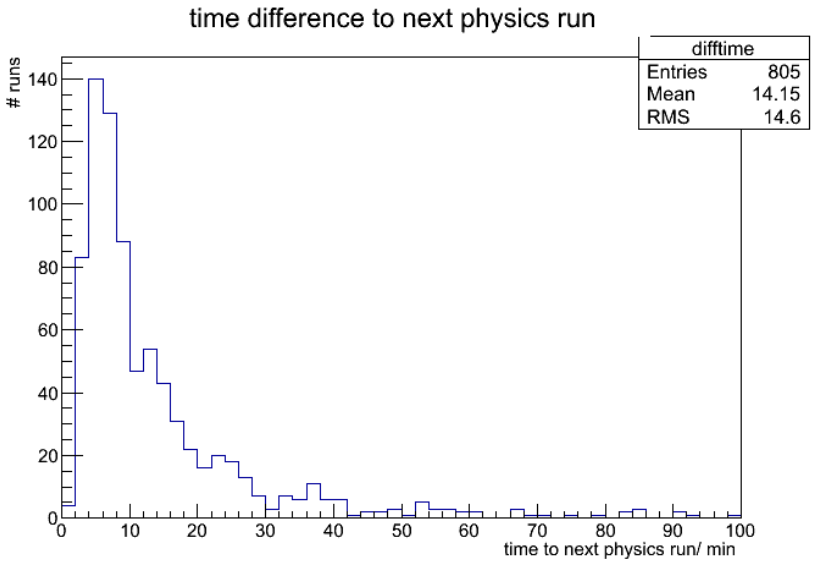


# Time between physics runs (within a fill)

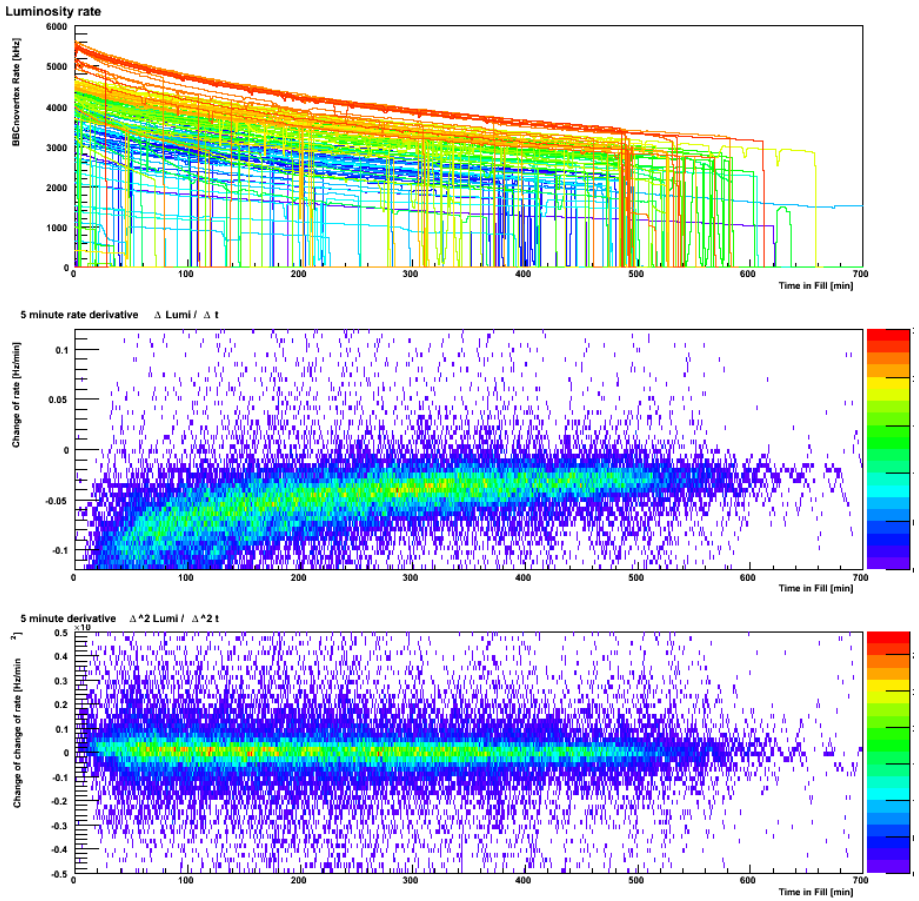
**Run12**




**Run13**

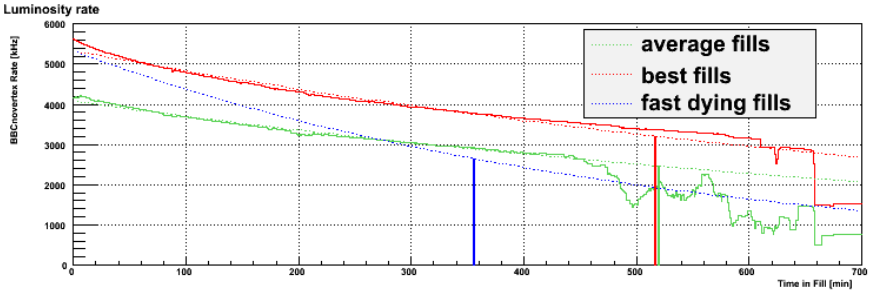


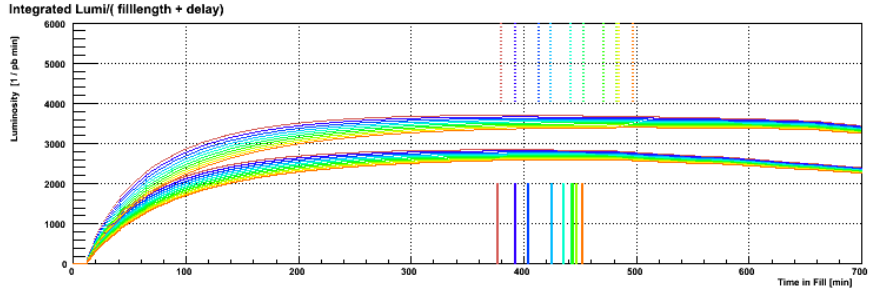
# Luminositities vs fill and time

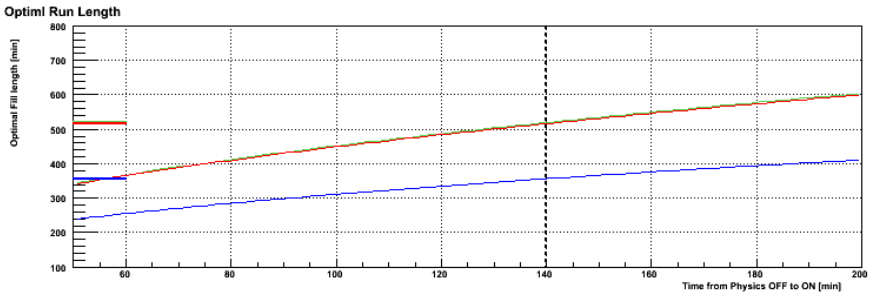



- Color coding:
  - Purple: oldest fills,
  - Red: latest fills
- Beam decay rates mostly very similar

# Run length study



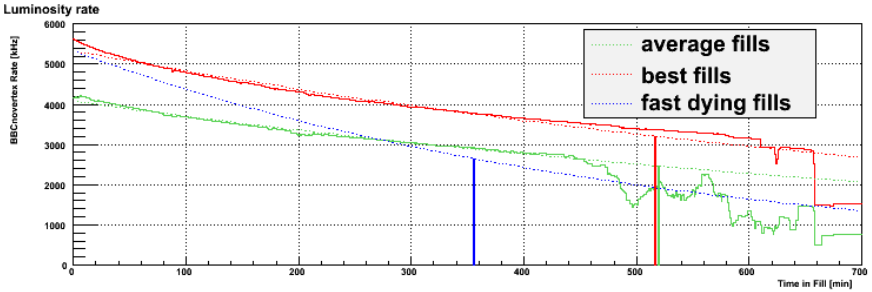



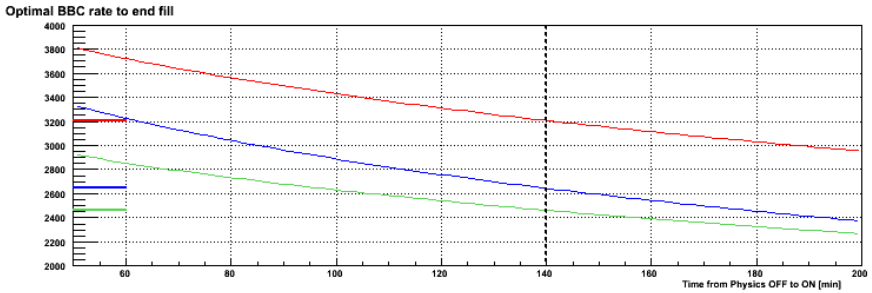



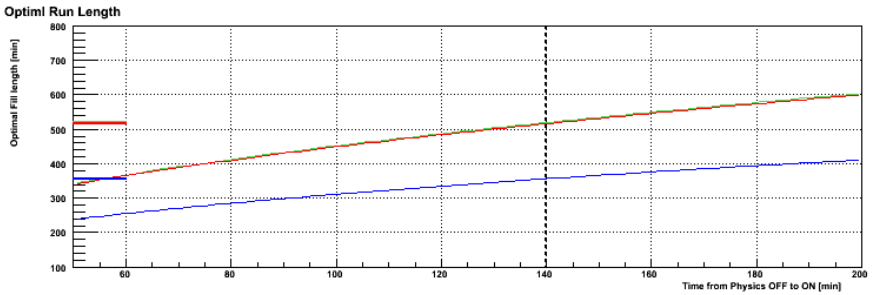

- Red: best fill so far
- Green: average fill for fills with > 450 minutes
- Blue fast decaying fill (best fill but twice decay rate)

- Optimize: Luminosity per ( fill end time + time between physics off and on) for delays between 60 and 160 minutes ( average around currently ~ 140)

# Run length study

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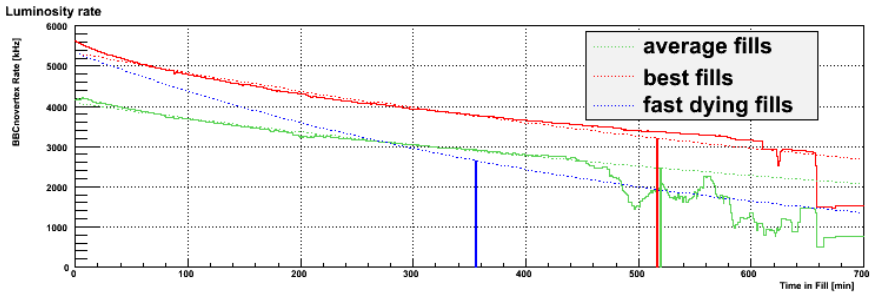
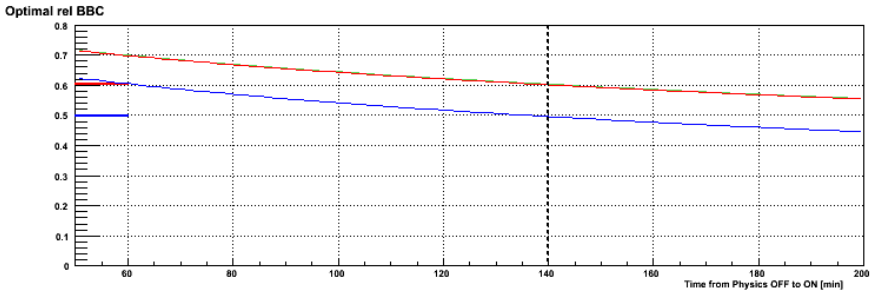
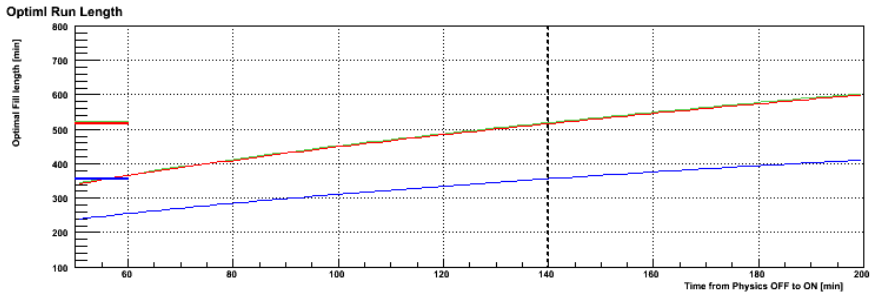
- Blue fast decaying fill (best fill but twice decay rate)

- Optimal running time for regular fills slightly longer than 8 hours

# Run length study

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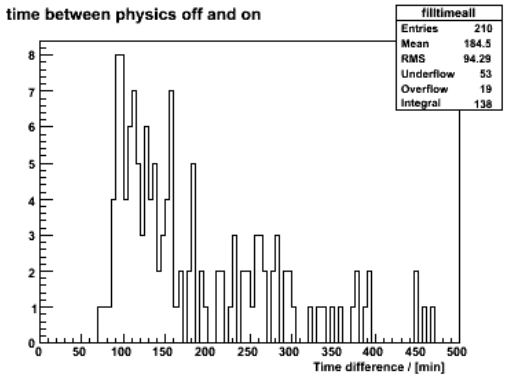
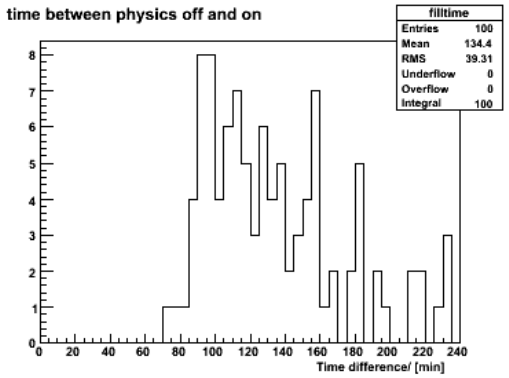
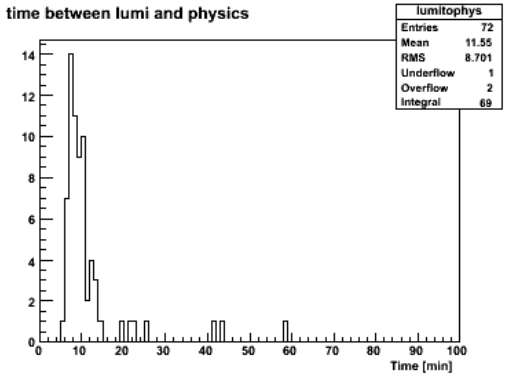
- Blue fast decaying fill (best fill but twice decay rate)

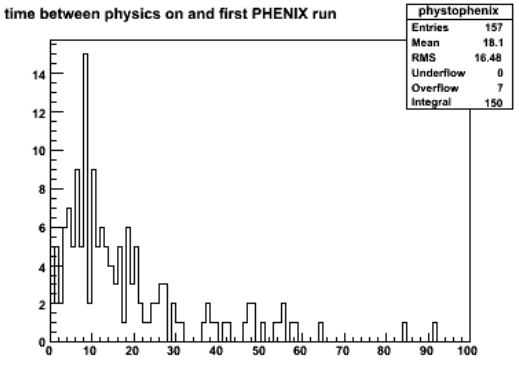
- Turn-off rate around 60% of initial BBC rate for regular fills, 50% for fast dying fills (but happens much earlier)

# Some more metrics



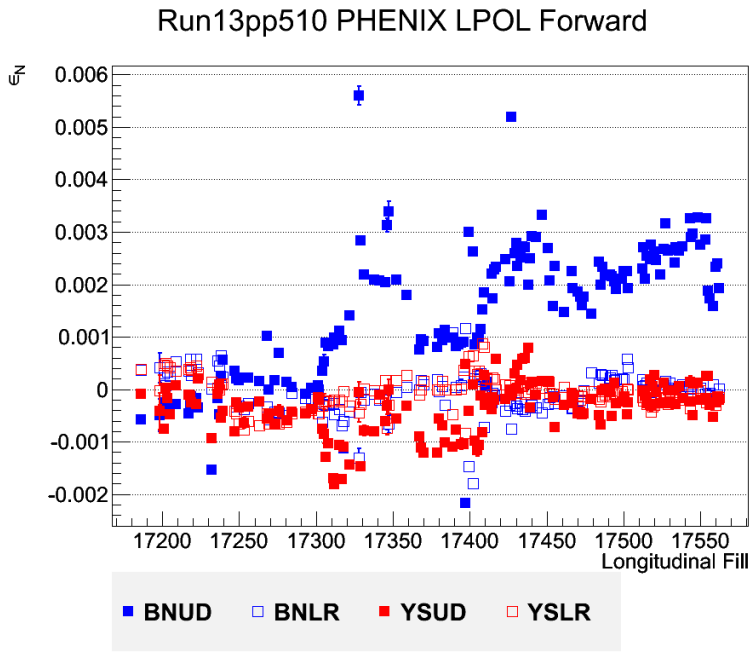




- Average time from physics off to physics on ~ 135 minutes after removing large tail (APEX, MD, etc)

# Transverse component




- Blue component often arount 10% with tendency to drift upwards
- Last weekend's intervention by Angelika improved the situation considerably

# Outlook

- PHENIX running smoothly, accumulated ~135 $pb^{-1}$ in 30cm vertex region

- Polarizations have improved, but average still a slightly lower than run12 averages ( 54%, 55% vs 55%, 57%) accd to CNI Fills page in collision