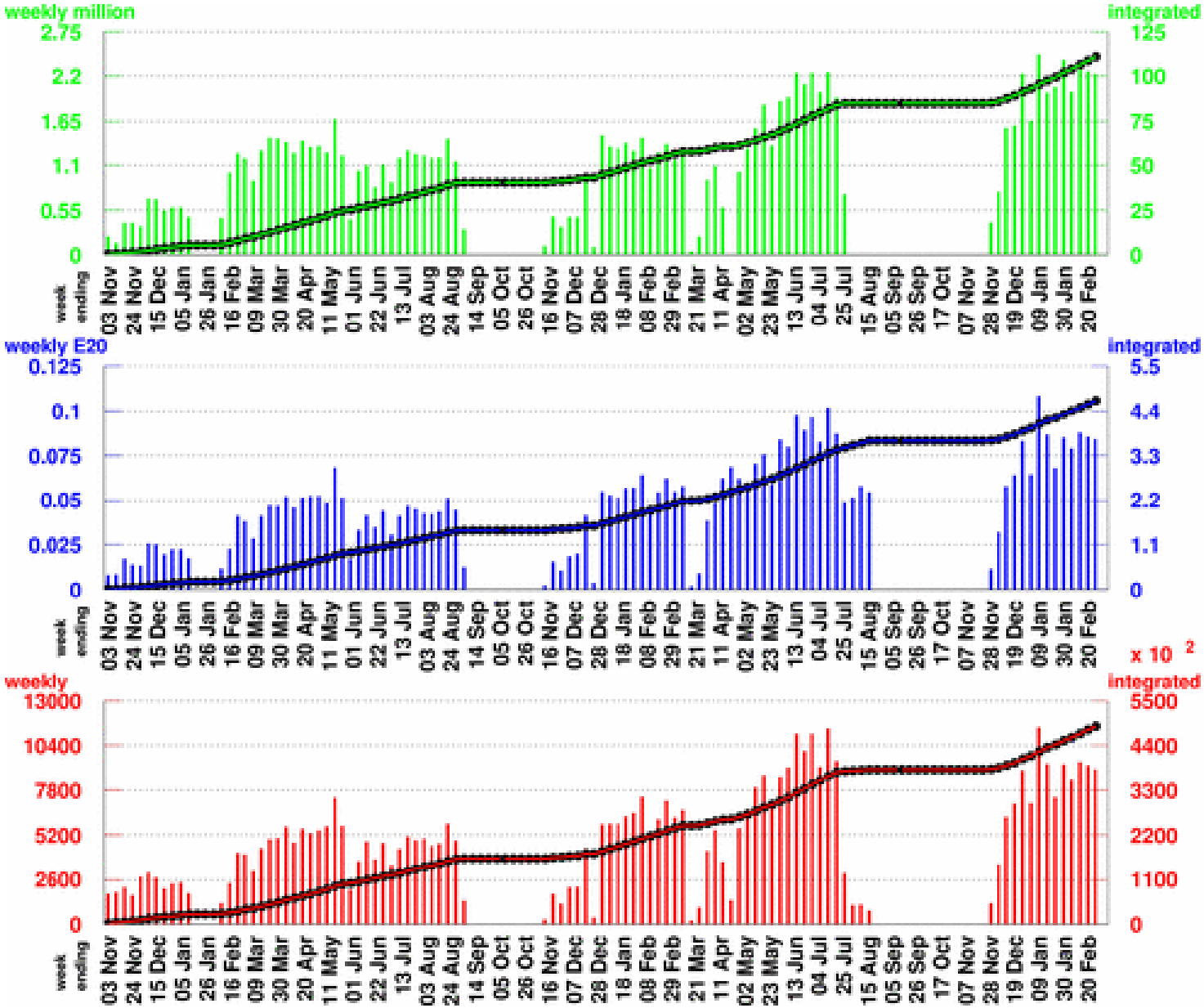
Fermilab AEM: MiniBooNE

P.Spentzouris
Fermilab

3/07/05

Progress Update



Number of Horn Pulses

To date: 110.71 million

Largest week: 2.46 million

Latest week: 2.22 million

(both horns)

Number of Protons on Target

To date: 4.6561 E20

Largest week: 0.1084 E20

Latest week: 0.0842 E20

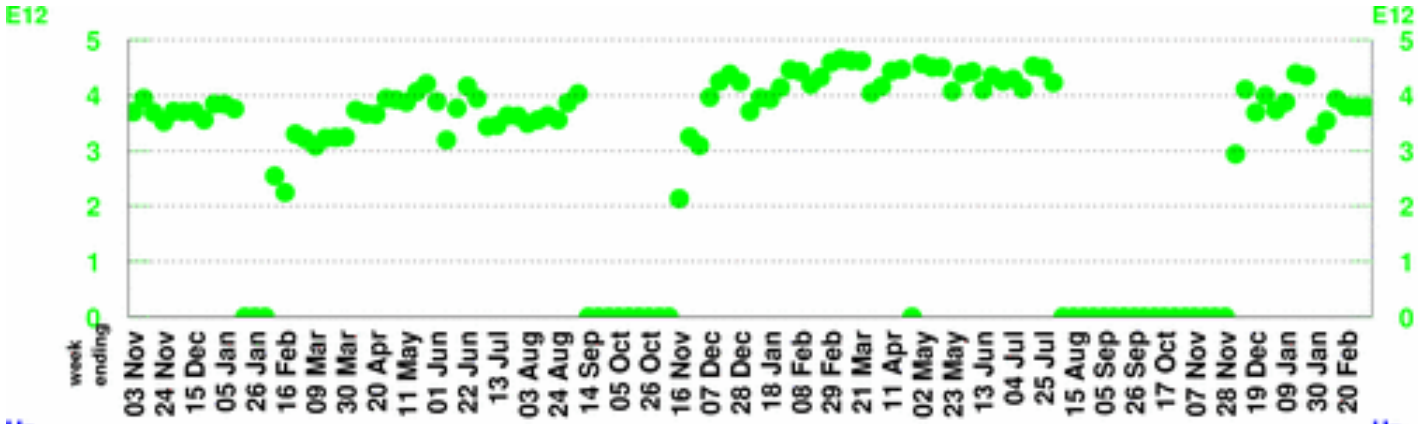
Number of Neutrino Events

To date: 488196

Largest week: 11447

Latest week: 9015

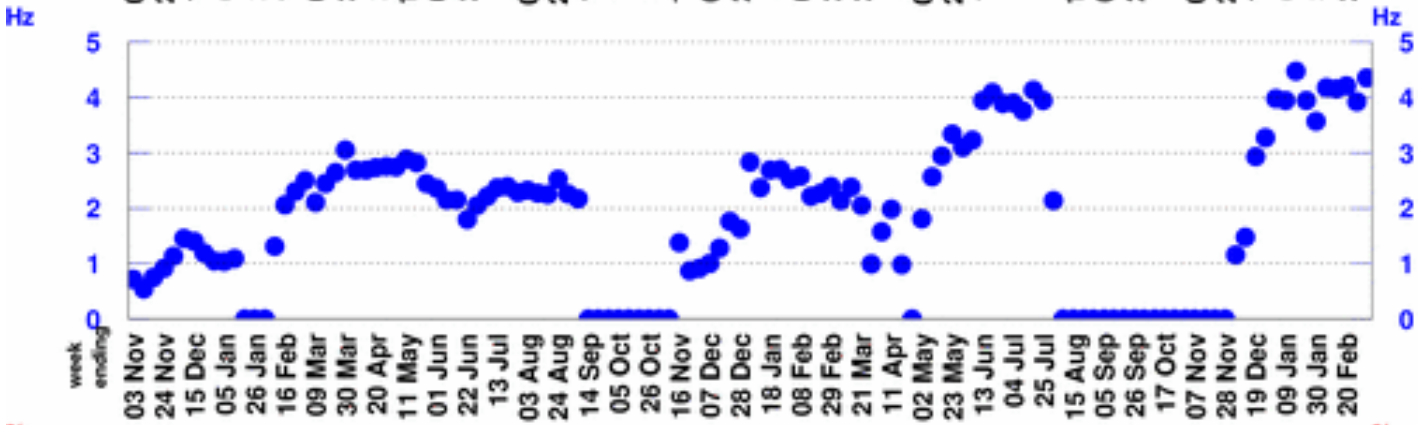
Proton Delivery



POT per Horn Pulse

Largest week: 4.66 E12

Latest week: 3.79 E12

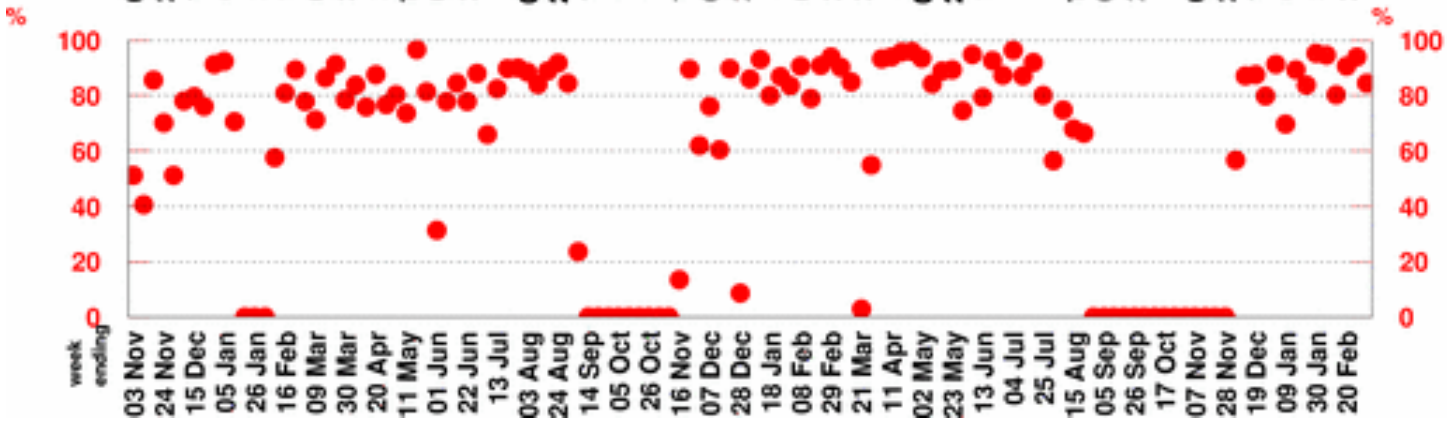


Horn Rate

(for time periods with beam)

Largest week: 4.48 Hz

Latest week: 4.35 Hz

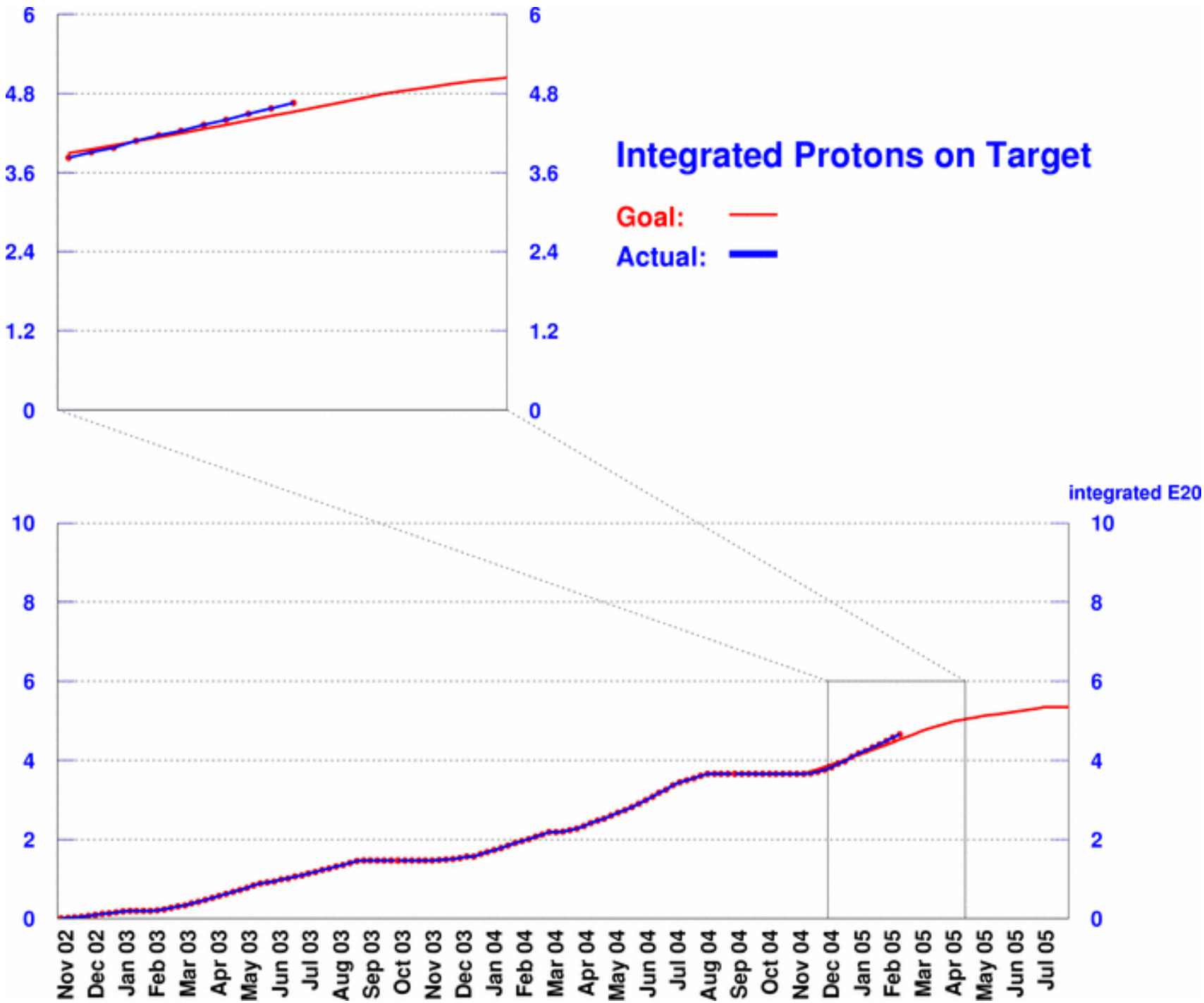


Beam Uptime Fraction

(fraction of time with beam)

Largest week: 96.6 %

Latest week: 84.5 %


Integrated Protons on Target
Goal:
Actual:
integrated E20
0
1.2
2.4
3.6
4.8
6
0
2
4
6
8
10
Nov 02
Dec 02
Jan 03
Feb 03
Mar 03
Apr 03
May 03
Jun 03
Jul 03
Aug 03
Sep 03
Oct 03
Nov 03
Dec 03
Jan 04
Feb 04
Mar 04
Apr 04
May 04
Jun 04
Jul 04
Aug 04
Sep 04
Oct 04
Nov 04
Dec 04
Jan 05
Feb 05
Mar 05
Apr 05
May 05
Jun 05
Jul 05

Proton Delivery

The MiniBooNE goal for the post shutdown period was set to 5E16 pph averaged over the 168 hours/week (D.McGinnis http://www-runii.fnal.gov/RunCoord/2004_aem-.htm). This is 8.40E18 protons in 7 days ≡ 1.2E18 protons/day, my definition of a good week in the past 6 AEM's).

This goal was met or surpassed ~50%, on the average we are on track. We are ~5 weeks to 5E20, with “average” week.

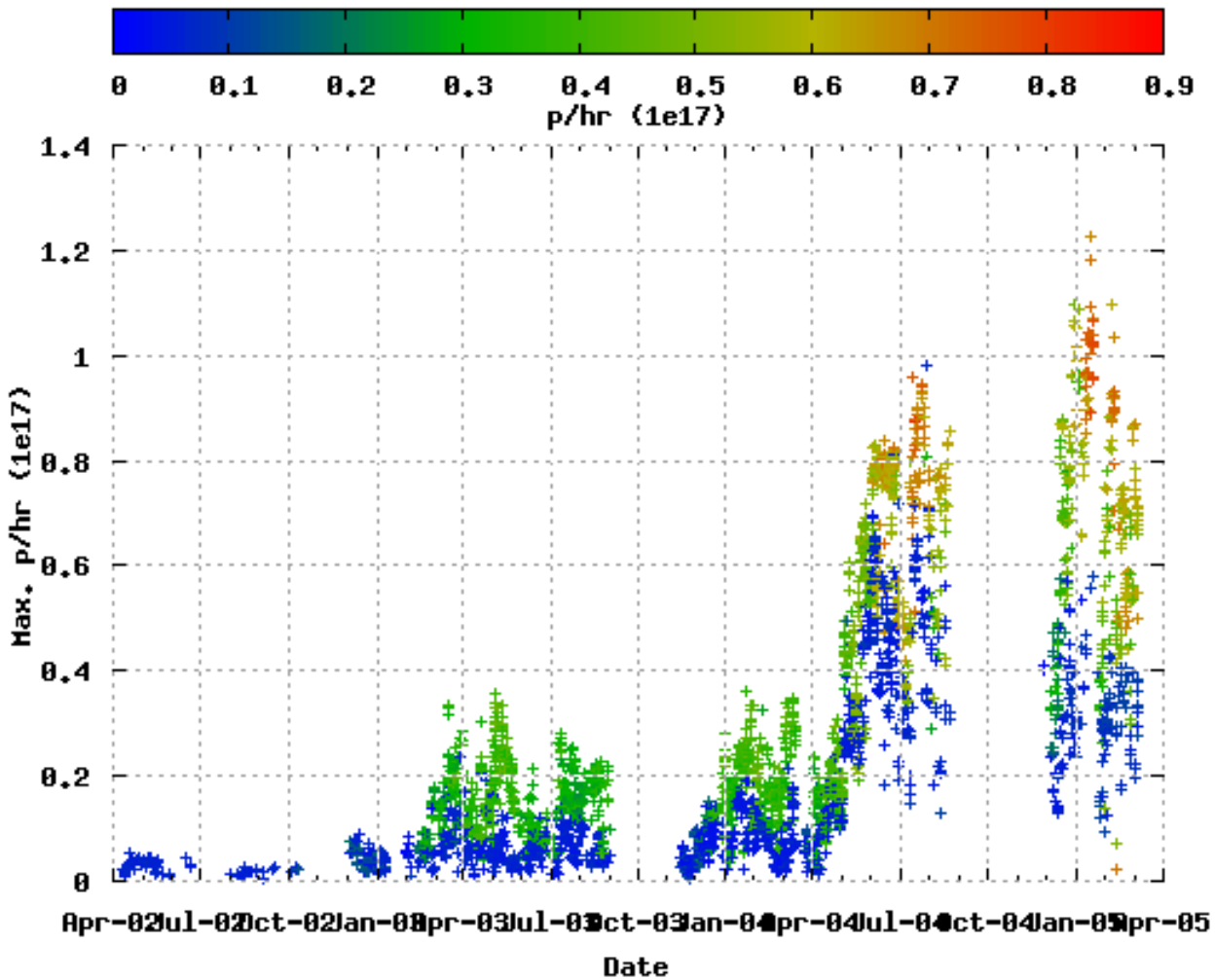
But parameters are changing...

Loss limitations

Maximum allowed protons/hr from BLM limit settings

(maximum protons/hour that could have been delivered without tripping one of the BLM's.)

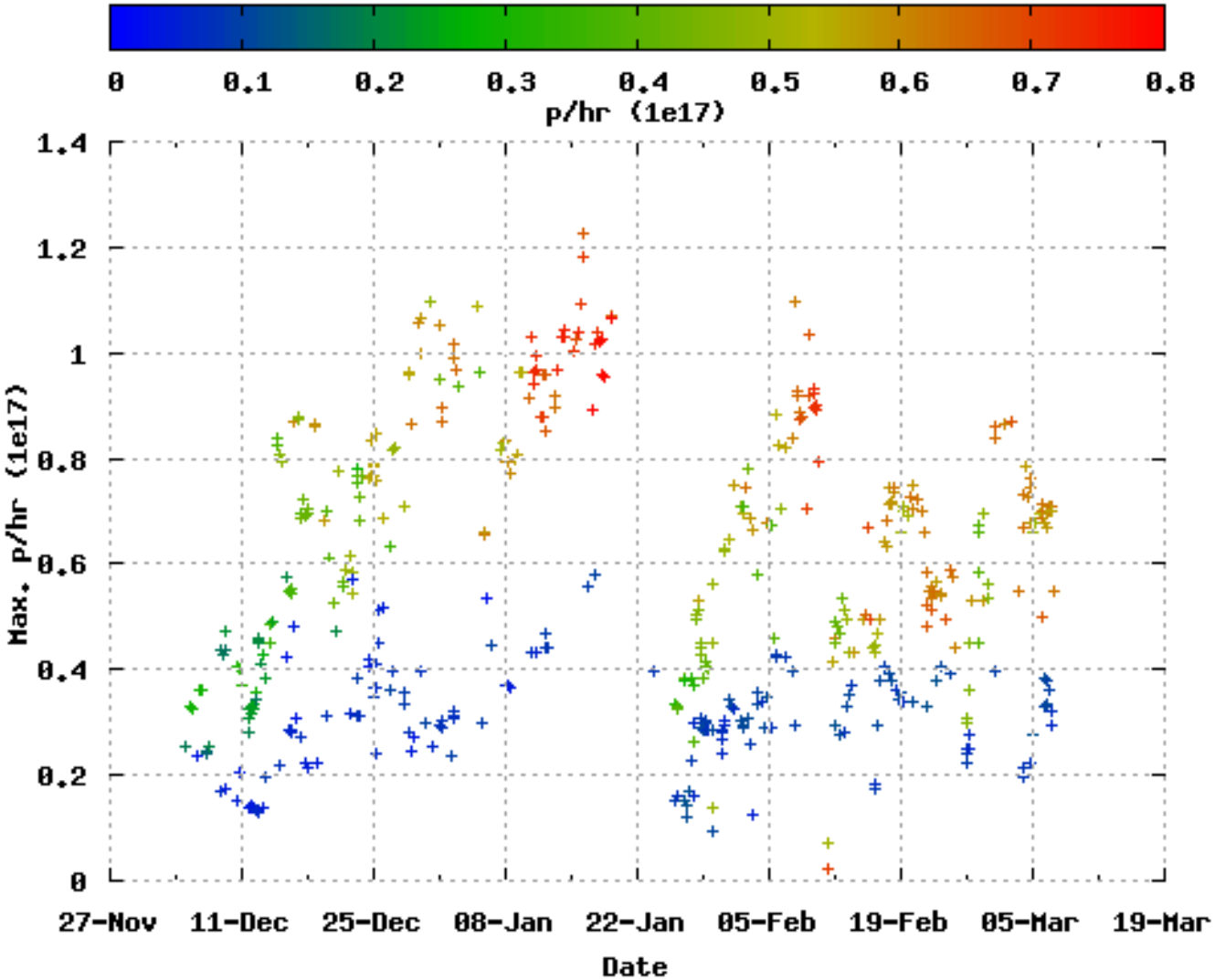
Actual protons/hr



So, blue is 14's (stacking) and other/other is 1D's (MBooNE)

Loss limits, con't

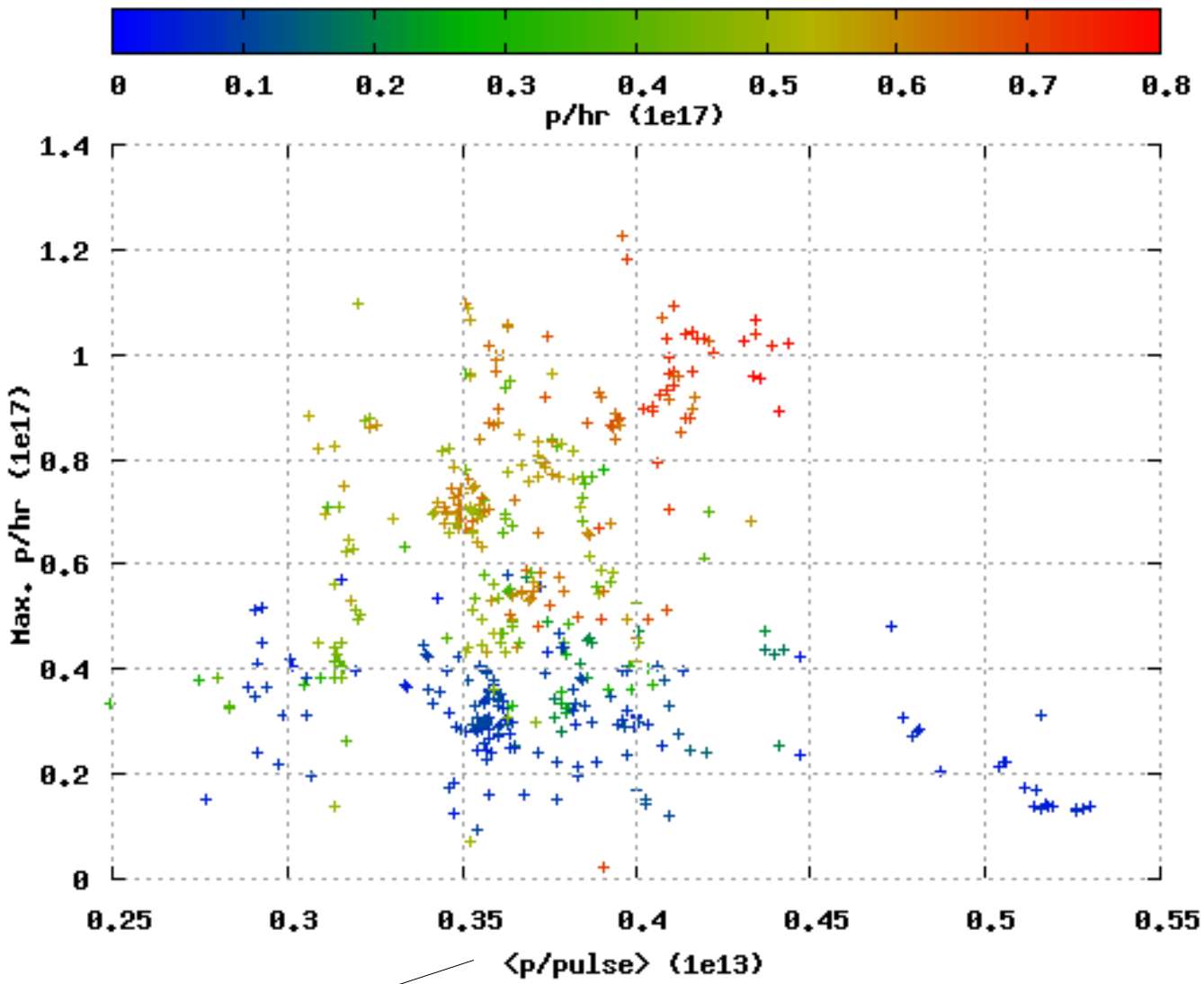
- 14's “lossier” than 1d's
- Current losses more limiting than mid-January
- Adding 5 NuMI batches to the 2 of stacking might eat up all loss-budget (will do so, scaling current losses, when NuMI reaches high intensity)



Also, in principle room to run harder (as far as BLM's are concerned)

Losses, con't

High intensity could be well behaved in terms of losses!



Protons per pulse

Same Dec '04 – Mar '05 period

Summary

- Losses could eat-up Booster loss-budget with stacking+NuMI @ high-intensity/rep-rate (concern to M'BooNE)
  - ~5 “current” weeks away from 5e20, expecting some “non-trivial” level of running till summer
- High Booster intensity does not have to mean high losses!
  - demonstrated (at least from blm's)