

# H1 Status



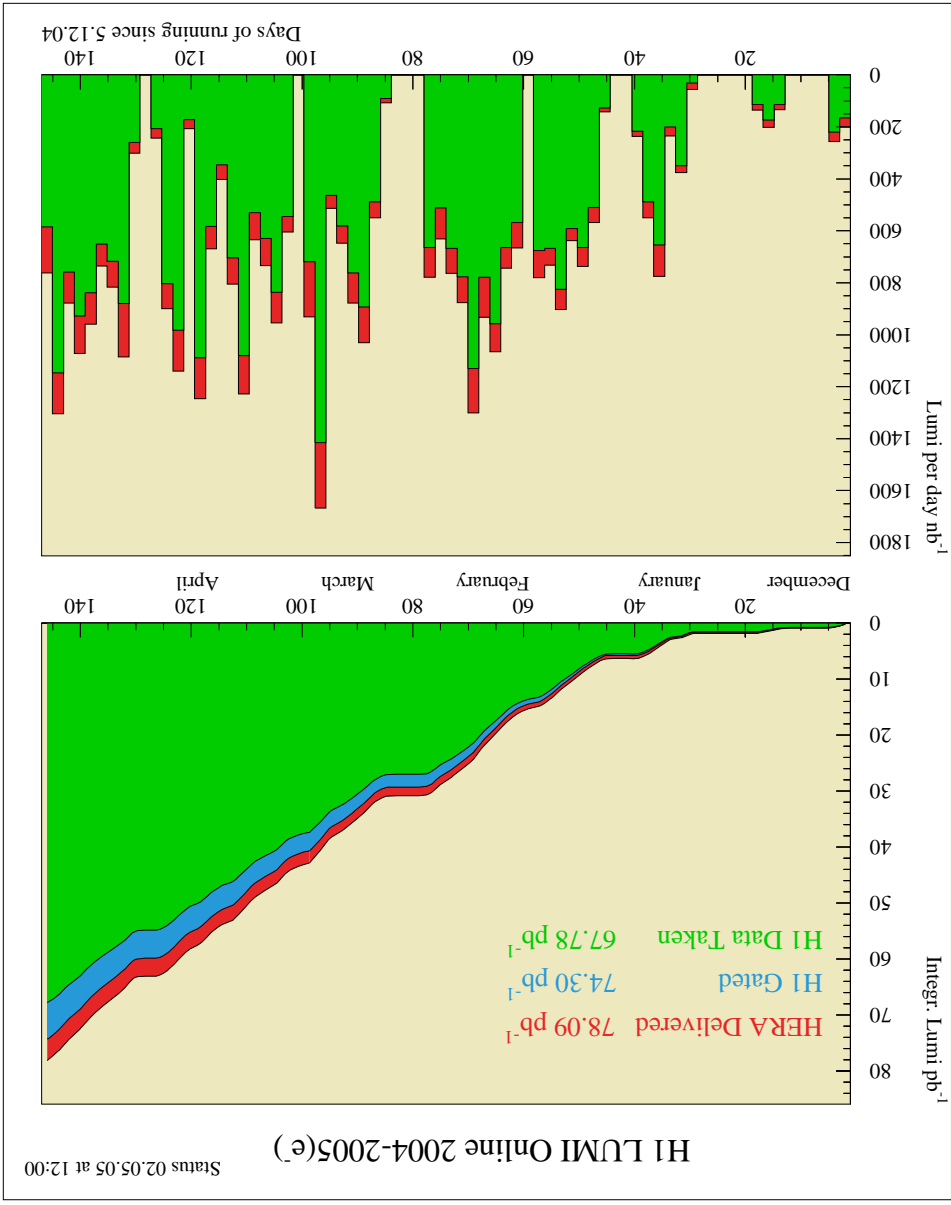
Daniel Pitzl, DESY

HERA coordination meeting, 3.5.2005

- Luminosity running
- FST/BST repair
- Planning

# $e_p$ luminosity production

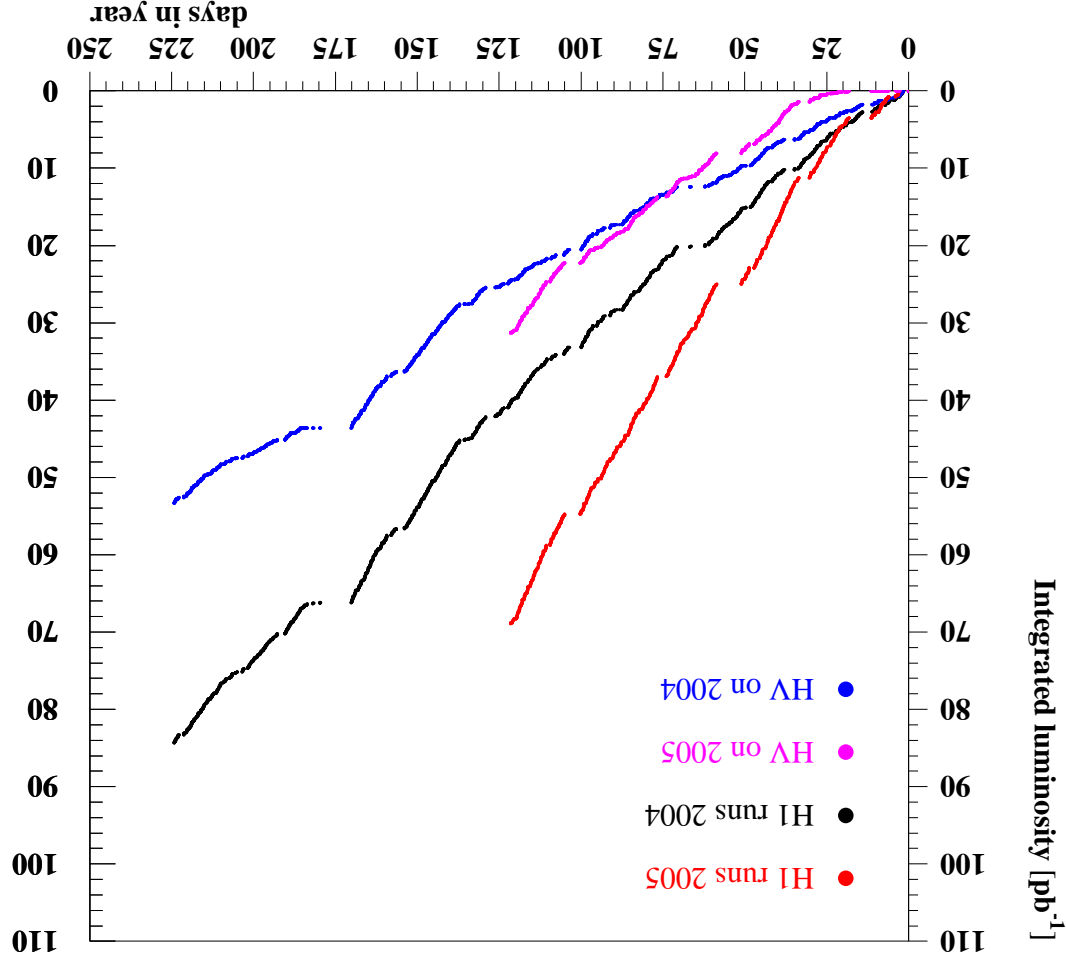
- HERA delivered:  $78.1 \text{ pb}^{-1}$
- H1 DAQ running:  $74.3 \text{ pb}^{-1}$   
95% average DAQ efficiency.
- H1 data taken:  $67.8 \text{ pb}^{-1}$   
9% average deadtime.
- Average production is  $0.5 \text{ pb}^{-1}/\text{day}$ .
- Peak production is  $1.5 \text{ pb}^{-1}/\text{day}$ !



# Luminosity collection 2005 and 2004

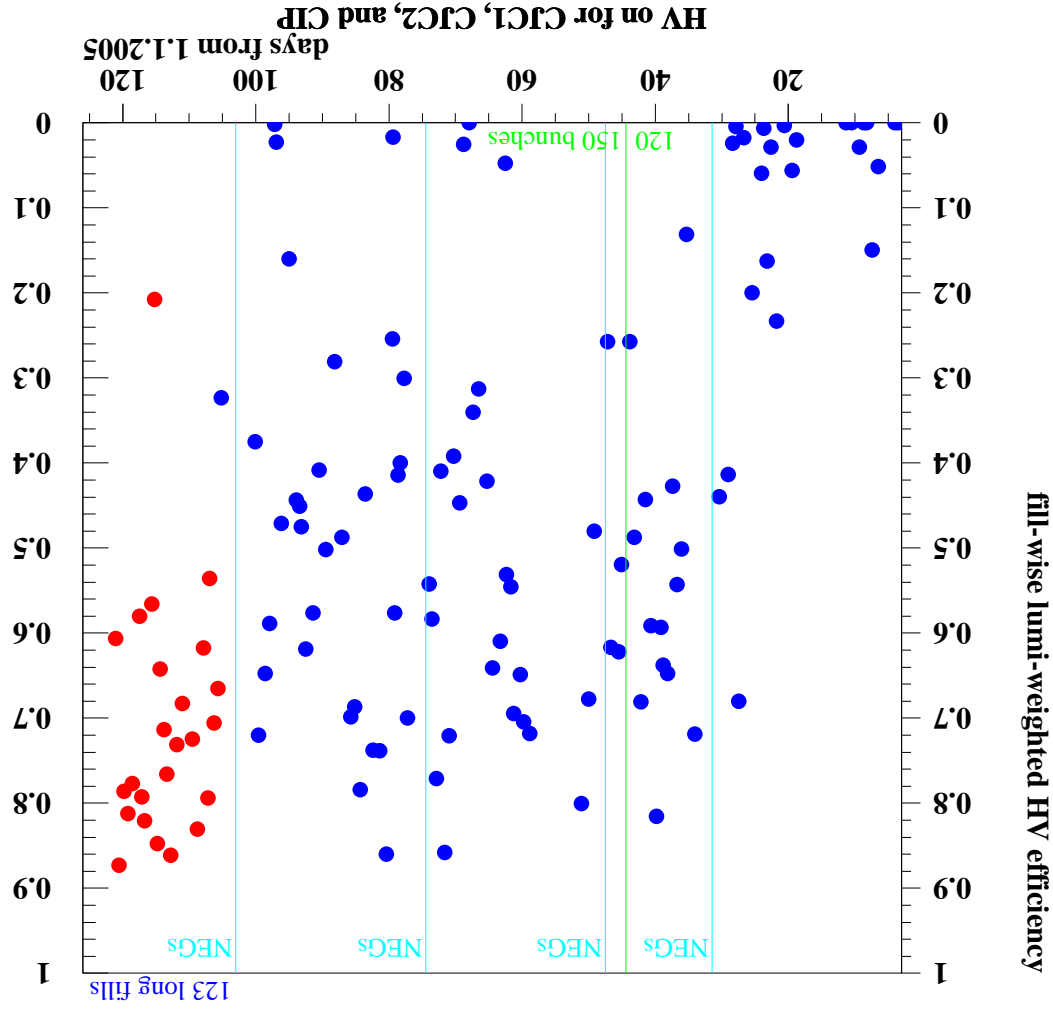
- HERA lumi production in 2005 is way ahead of 2004. Congratulations to successful  $e_p$  operation!

- H1 lumi collection with chambers at full HV is slightly ahead of 2004, but the overall HV efficiency is only 50%, improving recently.



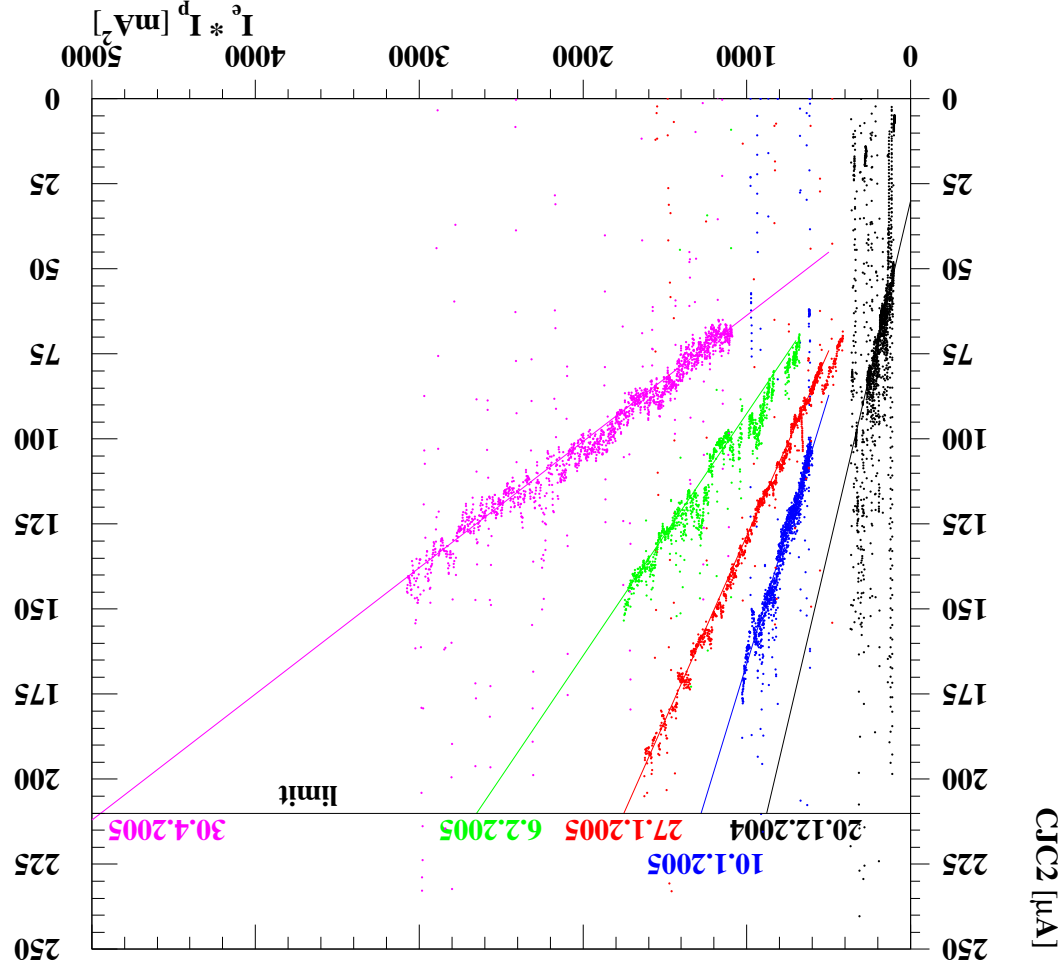
# High voltage efficiency 2005

- The HV efficiency improved significantly after the BU coil exchange SR, exceeding 80% for several long fills.
- Short (sub-ms) spikes still cause chamber trips, mostly from  $e^-$ , sometimes in bursts. Source unknown.
- $e^-$  background is sensitive to IP.



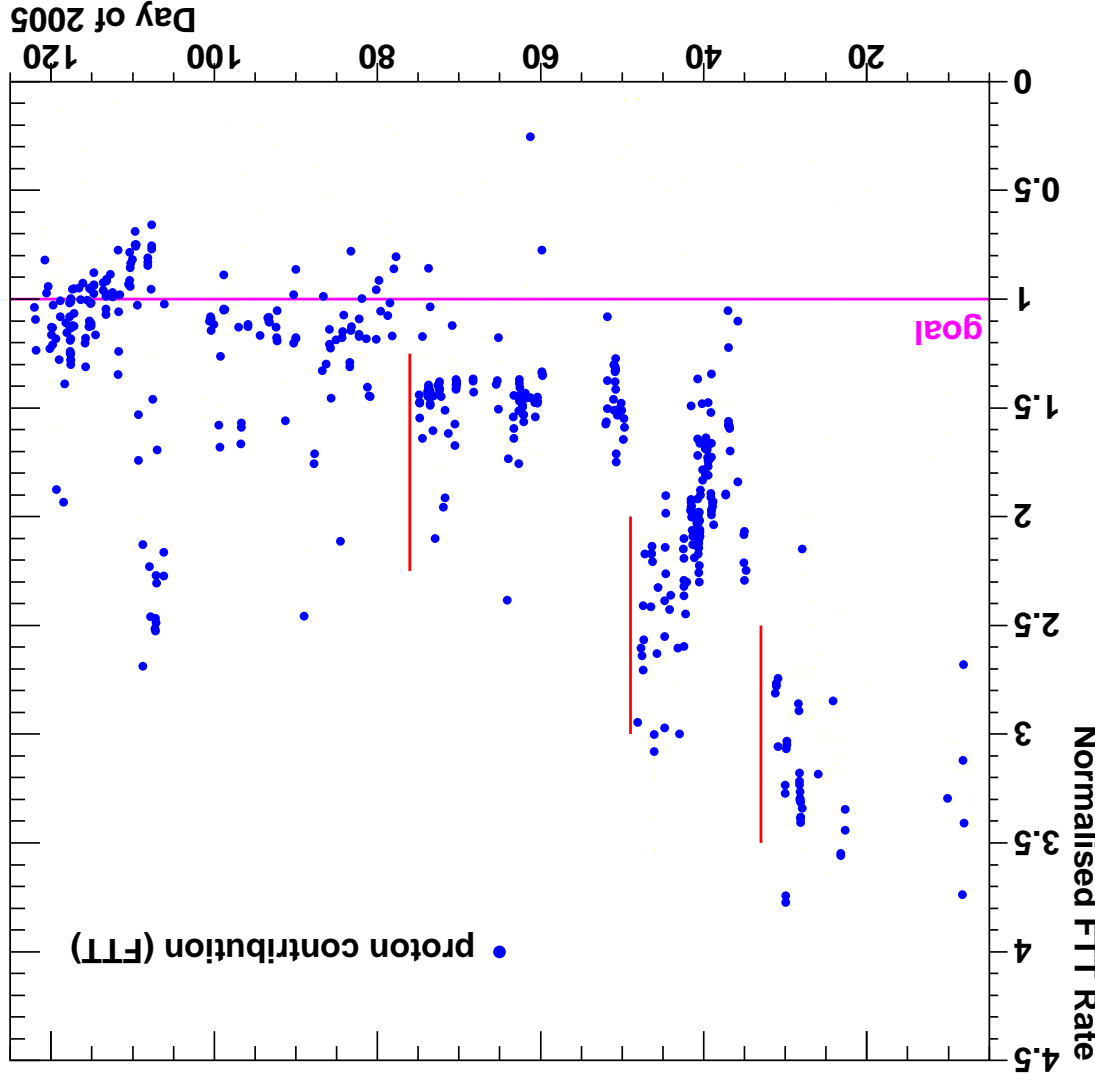
# Drift chamber operation

- Chamber current still scales with  $I_e \cdot I_p$
- ⇒ Dominated by  $p$ -gas background.
- Safe operation at  $35 \cdot 92 = 3500 \text{ mA}^2$ .
- Operation at  $5000 \text{ mA}^2$  should be possible.



# Development of the proton background

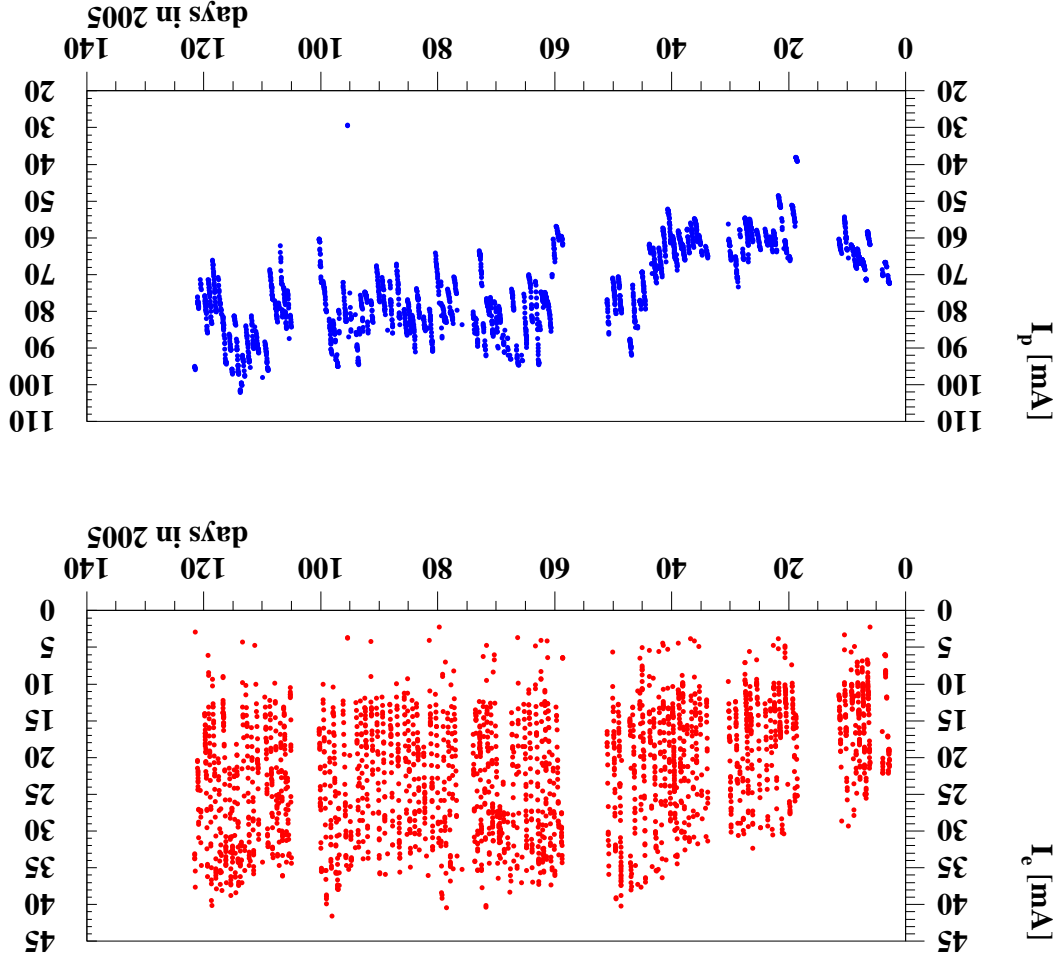
Time Dependence of Proton Background in 2005



- FTT track trigger rate measures the  $p$ -gas background.
- Normalized to beam currents.
- Steady reduction over 3 months, accentuated by NEG pump regenerations.
- Reached best values from June 2004.
- Further reductions expected, as at the South IP.

## Beam currents

- Starting electron current increased from 22 to 38 mA during Jan and early Feb, in 126 bunches.
- Running with 153  $e^-$  bunches (146 colliding) since 14.2.2005, without exploiting the potential (46 mA).
- Proton current reached 102 mA in 150 bunches.
- Dropped to 80 mA in recent fills.



## FST repair



- Rad hard readout chip produced, 1500 good ones selected.
- Received 93 Si sensors from CIS Efurt, need 120 + 30.
- 58 accepted, 15 rejected, 20 under long-term test, production continues.
- Hybrids: Straschu (D) failed, changed to Optiprint (CH), first 20 OK, SMD mounted, chip bonding this week.
- 130 more hybrids this week.
- ⇒ Changed assembly sequence: first BST, then FST.
- Goal: FST ready by end of Aug 2005.



## BST modification

- Re-use Si sensors and hybrids, but equip with rad hard chips.
- 2 wheels completed, under laser test in Zeuthen.
- Bonding of chips and sensors continues in Hamburg.
- Repeater boards already have rad hard components since 2003.
- New cooling water manifolds produced and tested OK.
- Goal: ready for installation by Aug 2005.



## H1 Planning

- H1 proposes to increase the  $e^-$  current towards 50 mA, switching to 180 bunches as soon as the bunch current limit is reached.
- Polarization tuning should be done parasitically as long as possible. A helicity flip should be done in the near future.
- GO/GG warmup and NEG pump regeneration is still expected to be beneficial. Next opportunity: 1.6.2005.
- The FST and BST repair is in full production, aiming for completion by end of Aug 2005 as originally planned.
- H1 supports the proposal to shift the start of the shutdown to November 2005 for replacement of all BU coils.
- A shutdown start on 7.11.2005 would allow to begin the vacuum conditioning before Christmas.