



# ZEUS last week



HERA weekly meeting  
Heuijin Lim (on behalf of Achim Geiser)  
18. 5. 2004

- ZEUS performance
- Understanding the spikes



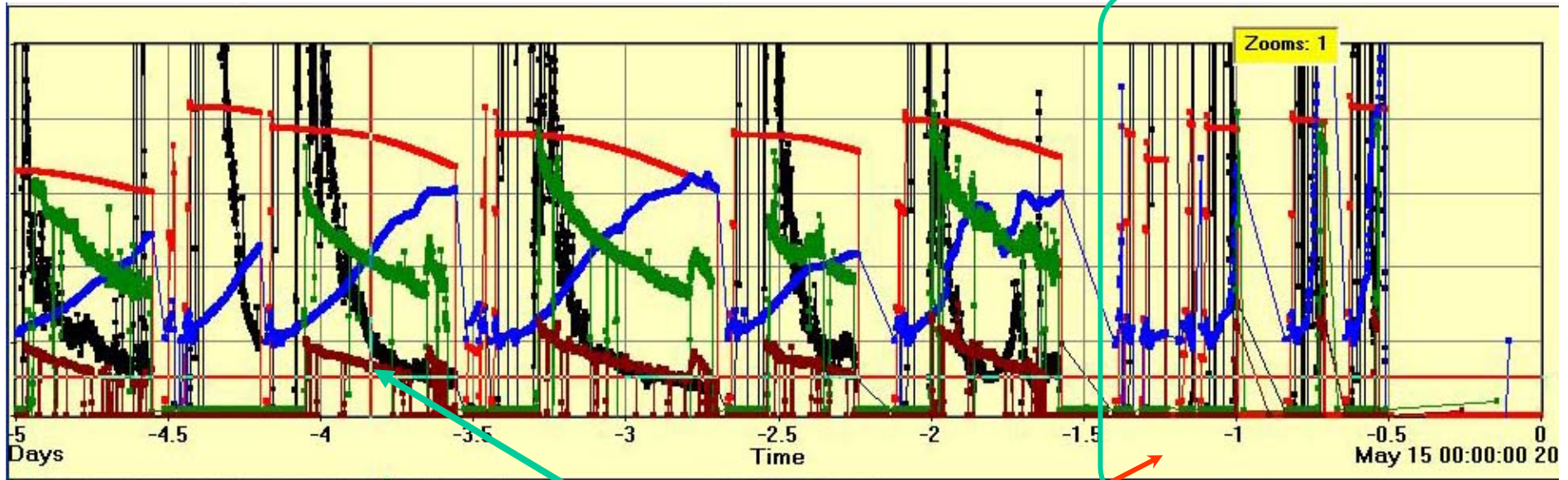
# ZEUS last week detector progress



- Tuesday-Thursday, no major hardware problems, no DAQ storms, reasonable data taking efficiency (~60-70%), record run
  - ✓ Still some problems with spikes tripping CTD, at least two kinds of spikes
- Thursday-Sunday, big problems with coasting beam, almost no luminosity.
- Monday morning, repair of HERA 208 MHz system seems to have recovered the condition of Tuesday-Thursday conditions.
  - ✓ LUMI problem in ZEUS: LUMI CAL shows values 3-4 orders of magnitude lower than spectrometer
    - The wrong Online Luminosity value was caused by wrong acceptance correction. It was read from corrupted LUMI Display Shared Memory.
      - Offline data is fine!
    - Re-creation of LUMI Display Shared Memory.
      - LUMI shows the reasonable values.
- Monday night to 8:00 am, smoothly taking data ( $\sim 200 \text{ nb}^{-1}$ )



# ZEUS last week



data taking performance (May 10-14)

Thursday-Sunday, big problems with coasting beam, almost no luminosity

Coasting beam	~ 4.74 mA
Proton life time	~ 151.73 Hr
Proton current	~ 90 mA
CTD rate	~ 19.00 Hz



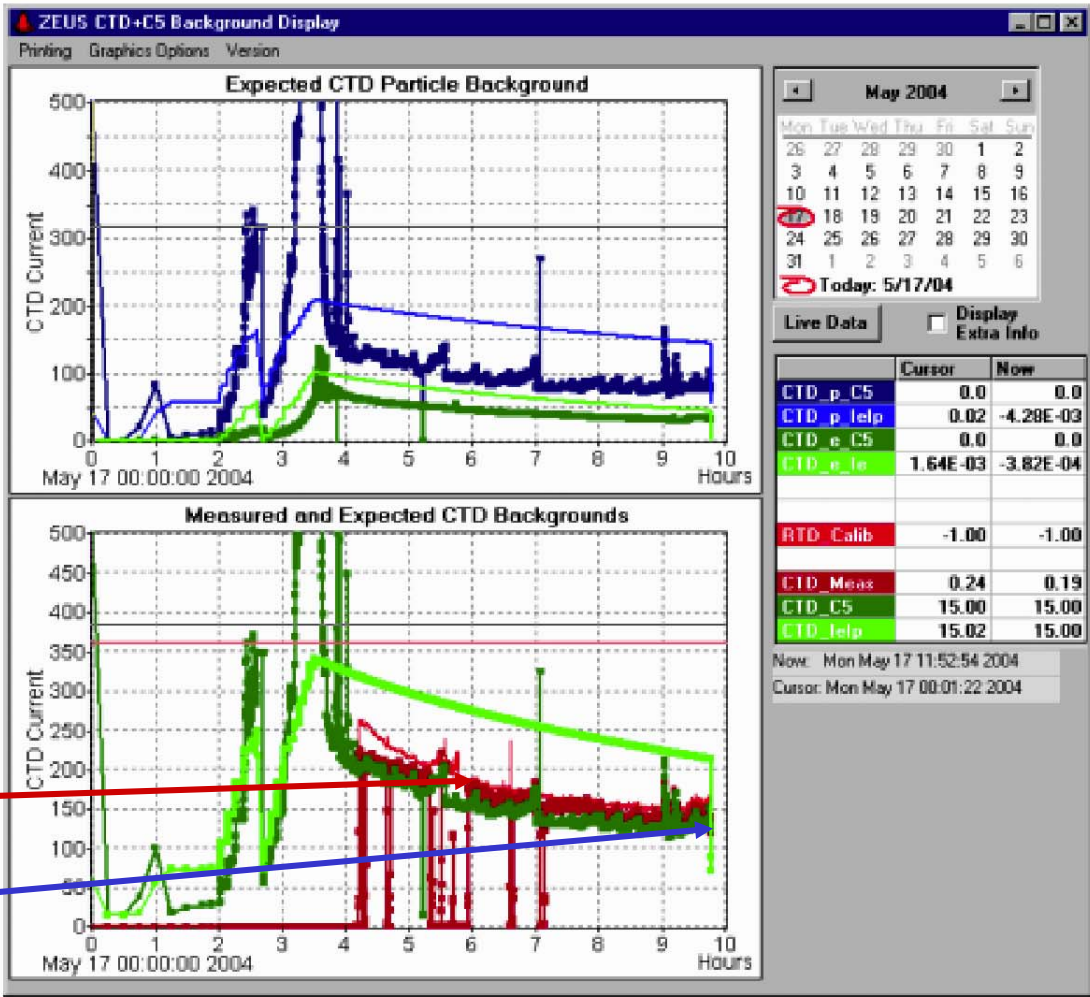
# ZEUS Monday morning



HERA back to reasonable situation of tuesday-thursday

ZEUS Background display

HERA improves  
HERA loses beam



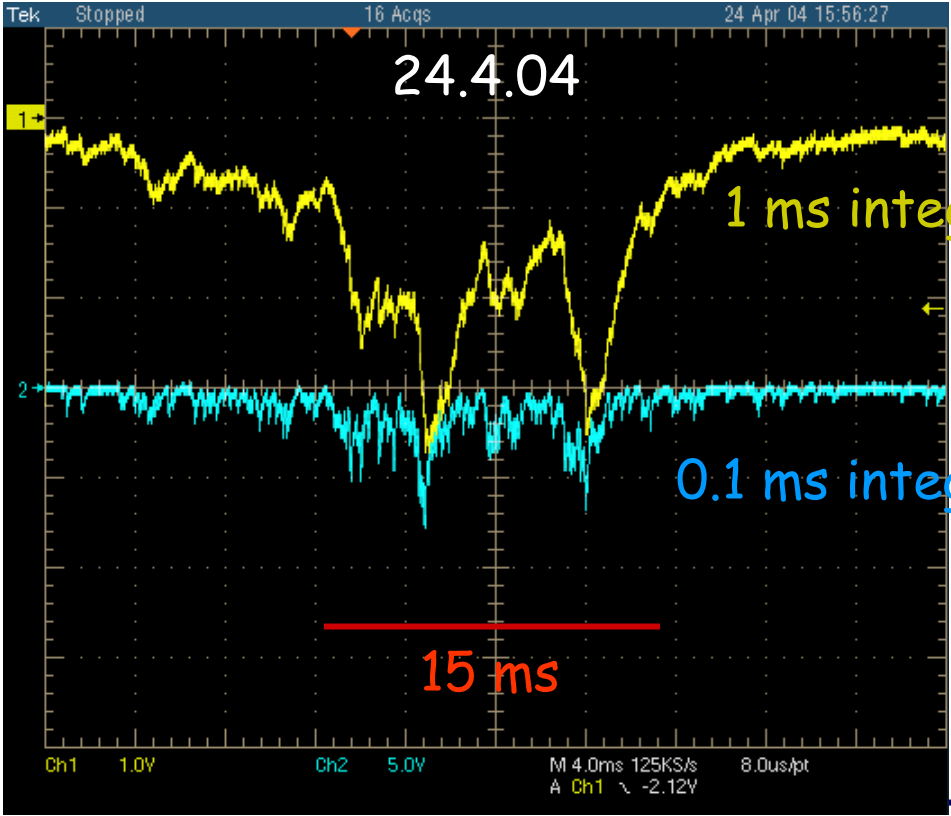


# ZEUS

## Understanding the spikes



Oscilloscope/integrator setup by **U. Koetz, R. Carlin**  
pictures by A.Ge, Y.Yamazaki, 24.4.04, A.Ge.,S. McGill, 10.-14.5.04  
use **8m scintillator signal** (mainly sensitive to protons)



clear correlation to  
CTD spikes/trips in  
ZEUS online monitor

typical spike which  
tripped CTD in  
„semi-bad“ conditions  
(trip every few  
minutes)



# improvements



## HERA:

- full repair of intermediate frequency generator during last access
- spikes occur later in the fill + smaller, less frequent
- remaining problem still related to coasting p beam

## CTD group measures to reduce sensitivity to spikes:

- trip threshold raised 400 -> 700 units few weeks ago  
(was 300 in 2000)
  - reduced sensitivity to spikes  
(trip frequency reduced by ~factor 3, shown last week)
- raise of trip time constant seems not to be possible
- efficiency recovered: ~30% (few weeks ago) -> 60-70%



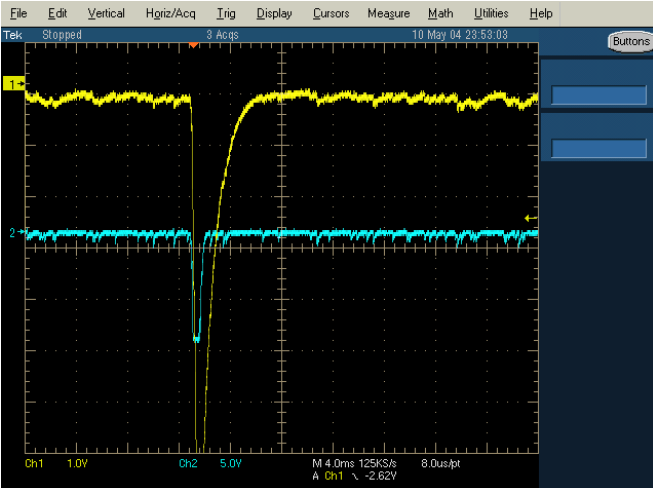
# HERA/ZEUS last week spikes at start of fill



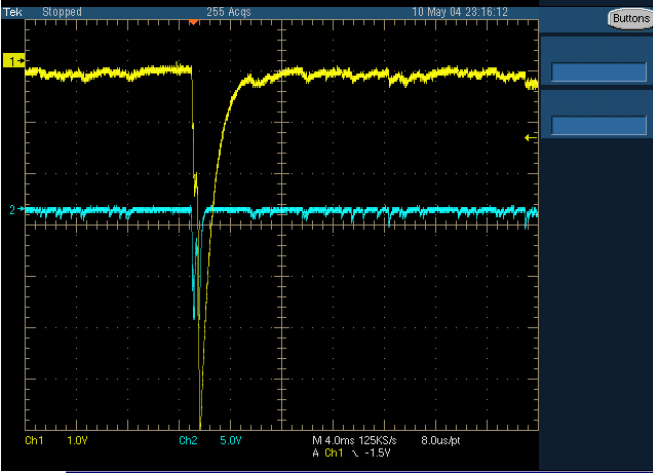
mostly single peak

examples:  
10.-11.05.04

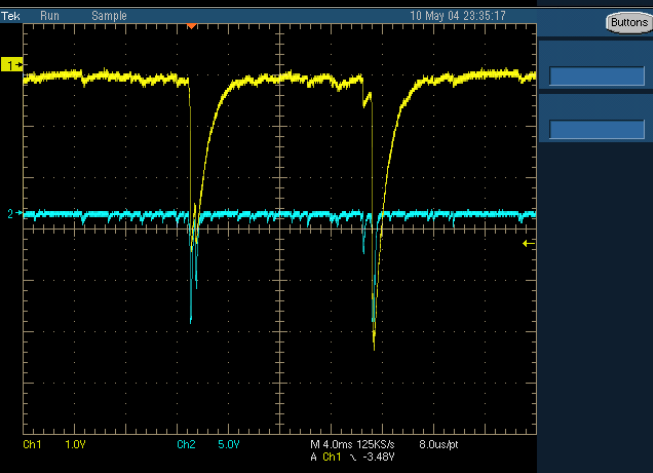
sometimes double peak



tripped



not  
tripped



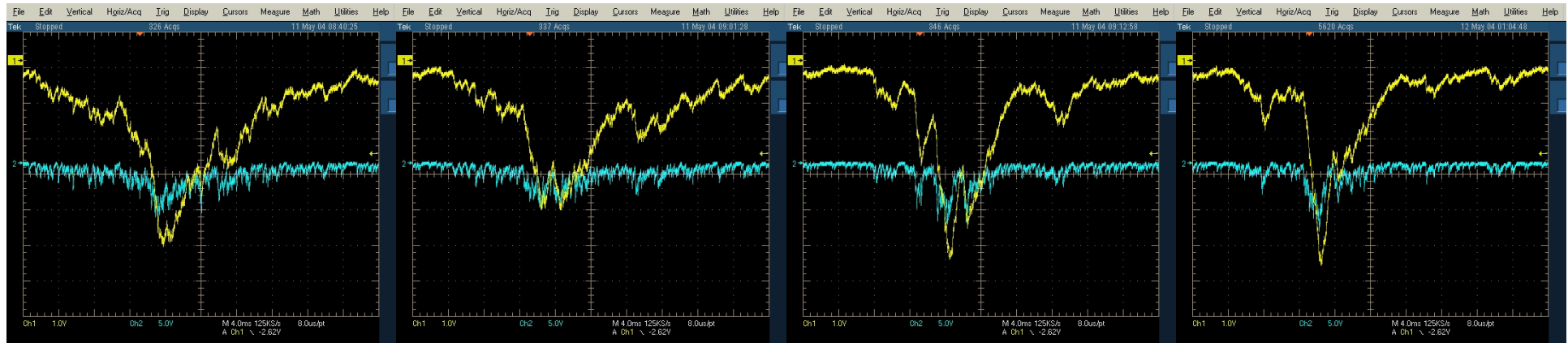


# HERA/ZEUS last week spikes toward end of fill



examples: 11.-13.5.04

tripped



not  
tripped

