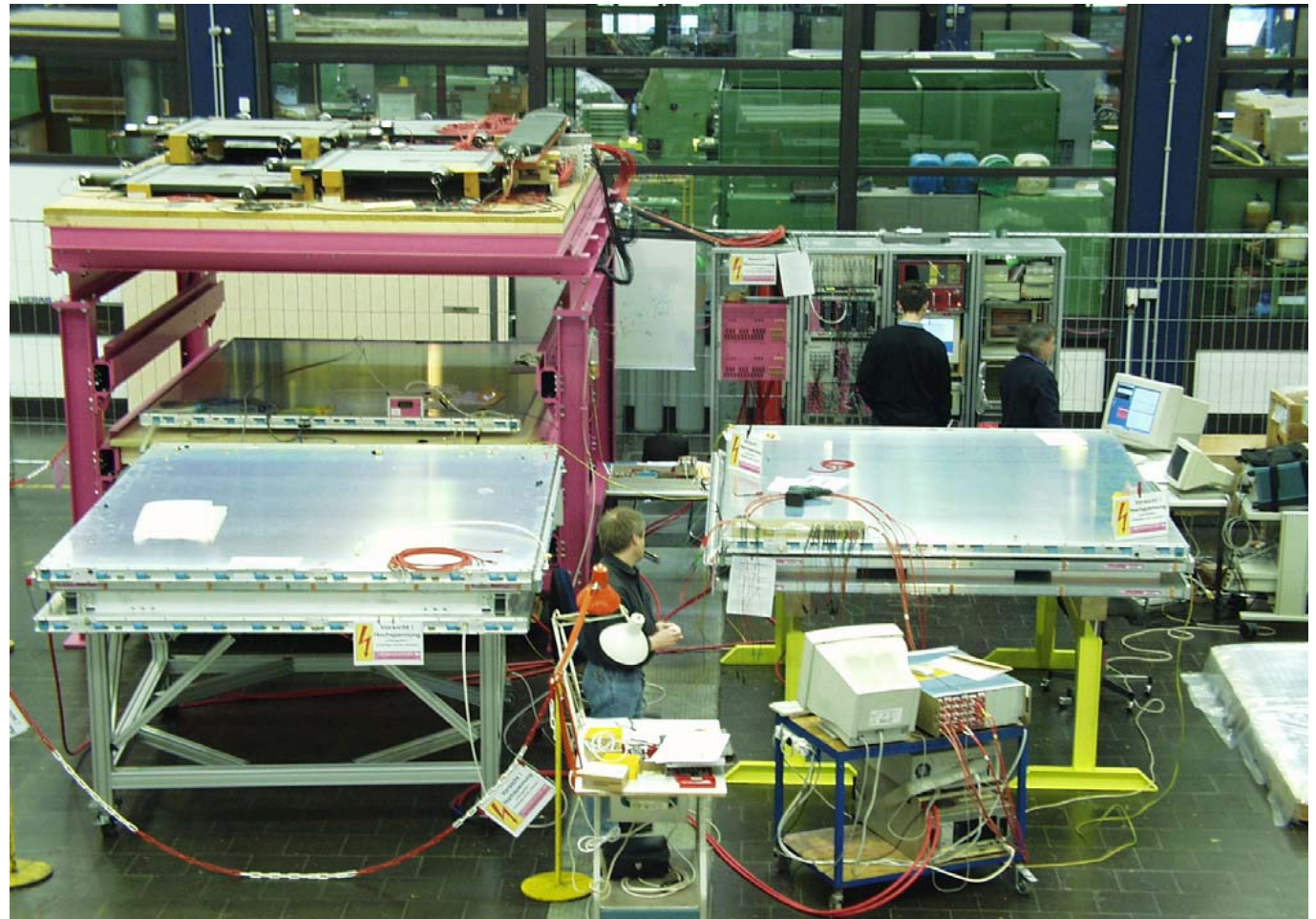
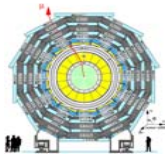


## *Tests & QC at Aachen Production Site*



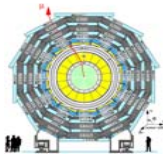
- ◆ Updates
- ◆ HV Tests
- ◆ Cosmics data taking & Noise



## Some updates...



- ◆ Local data repository (see QC talk)
- ◆ QC analysis (see QC talk)
- ◆ Oxygen content measured
  - All tested SL reach Oxygen concentrations below 500 ppm, independant on gas tightness. QC fulfilled.
  - 500 ppm reached after ~10 volume exchanges (flux independant). Further decay from 500 ppm down to 24 ppm.
- ◆ Overpressure tests at 60 mbar.



# HV Tests

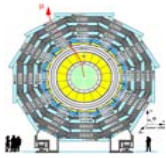


## Situation on 02/05/2002:

- ◆ 12/18 SL successfully tested in gas. 3...6 SL with HV problems  
Training conditions: Trip time = 0 s,  $I_0 = (10/20/20) \mu\text{A}$
- ◆ Trip without recorded above-threshold-current
- ◆ Currents and/or Trip after several days of running (1-2 weeks)
- ◆ Appearance of currents of up to 5...30  $\mu\text{A}$  for  $\sim 100$  s (Type A: disappear, Type B: increases)
- ◆ One SL with all strips showing  $I=12 \mu\text{A}$  per HV-group

## Diagnosis:

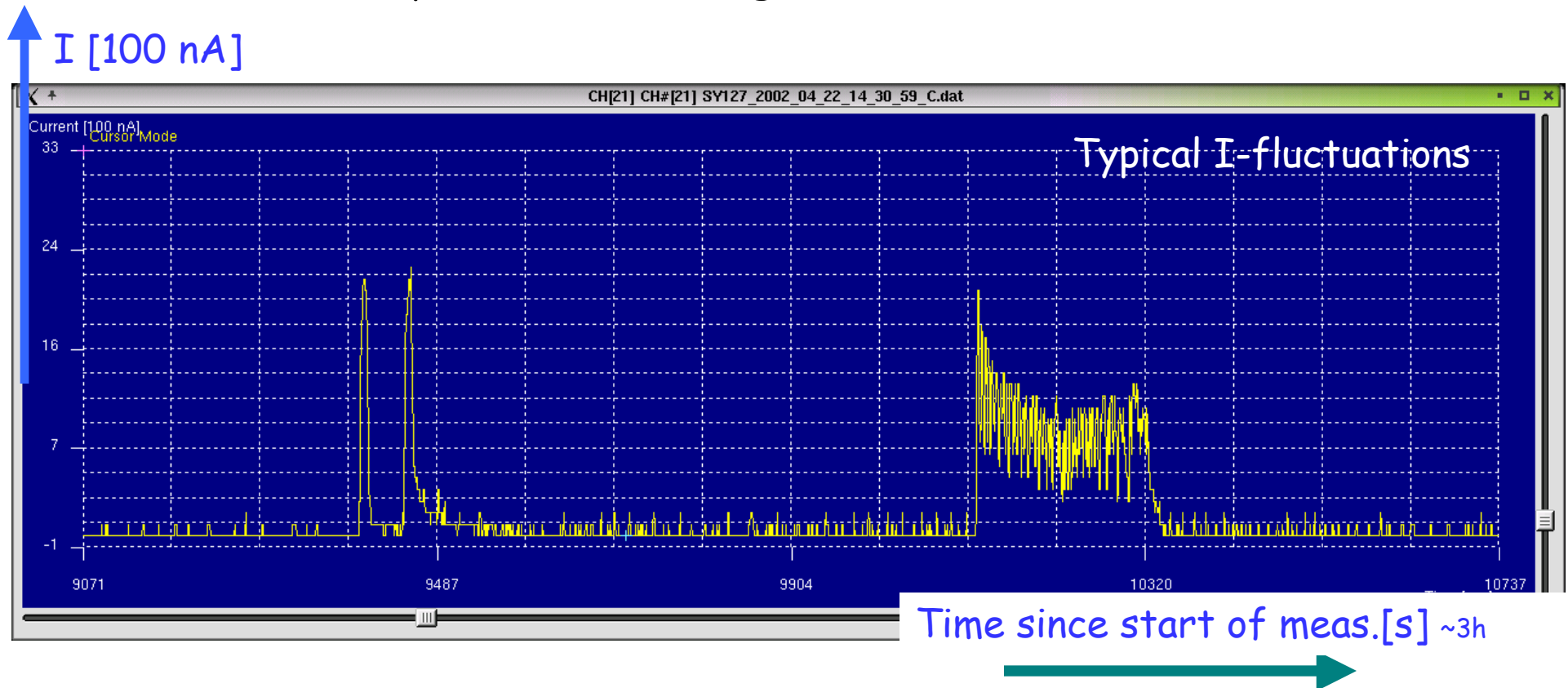
- ◆ Cell spotting based on current monitoring
- ◆ Trying to find high noise level in cosmics failed
- ◆ Non-identifiable cells (moving)

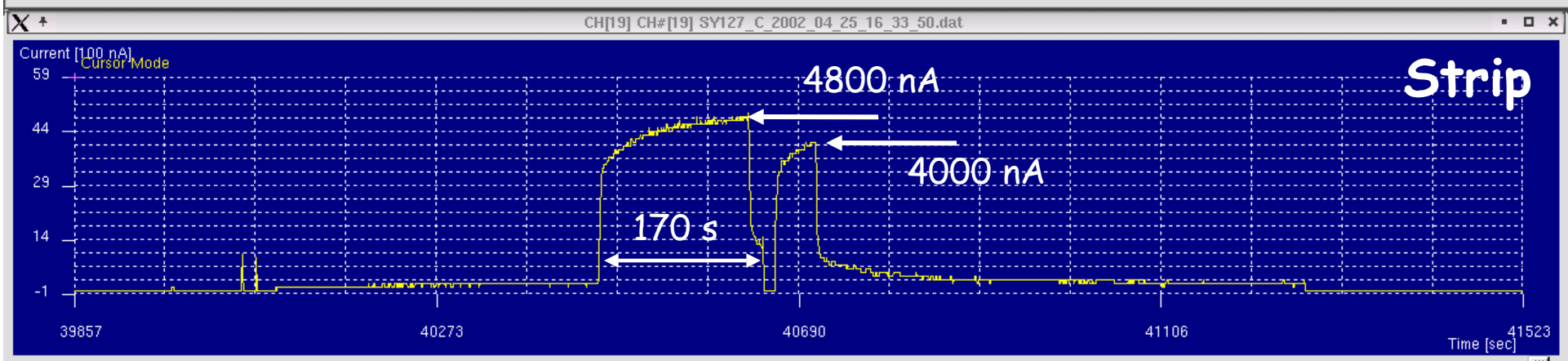
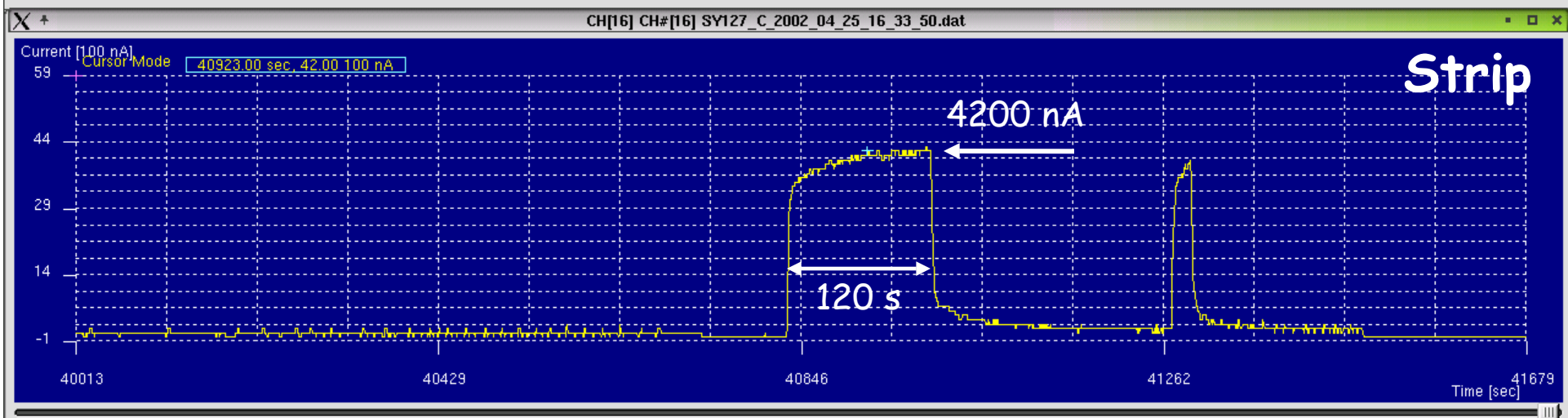
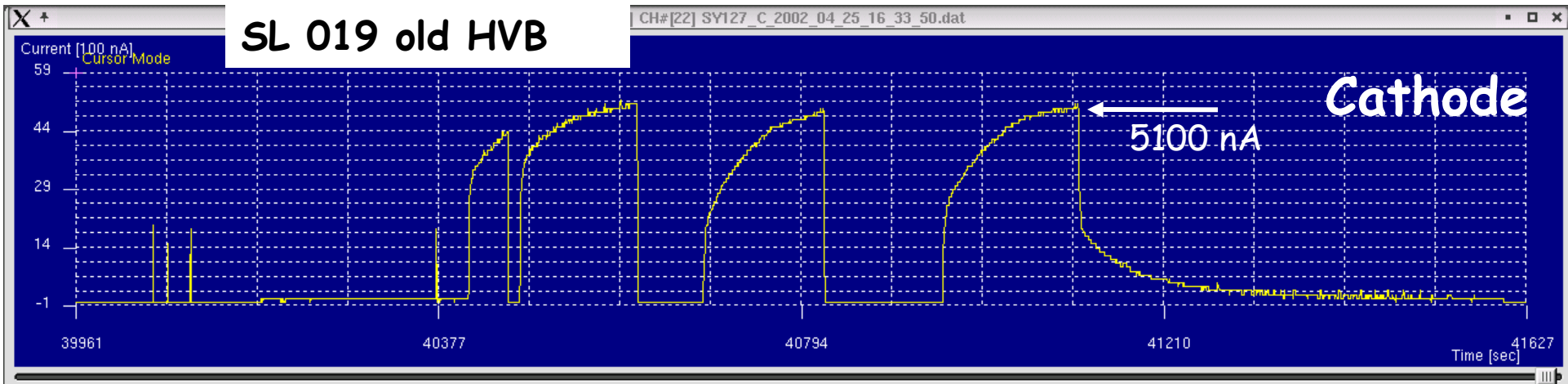


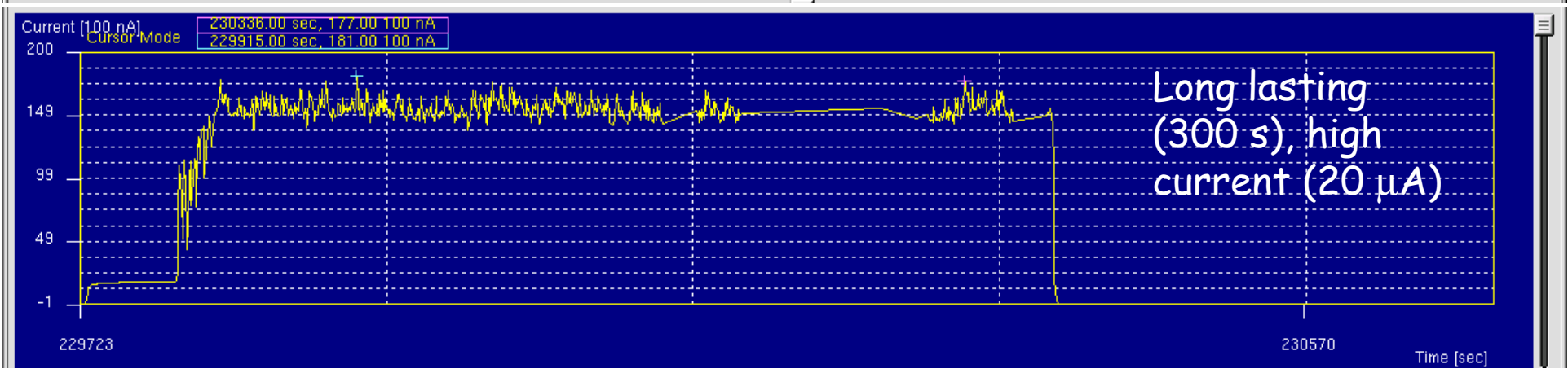
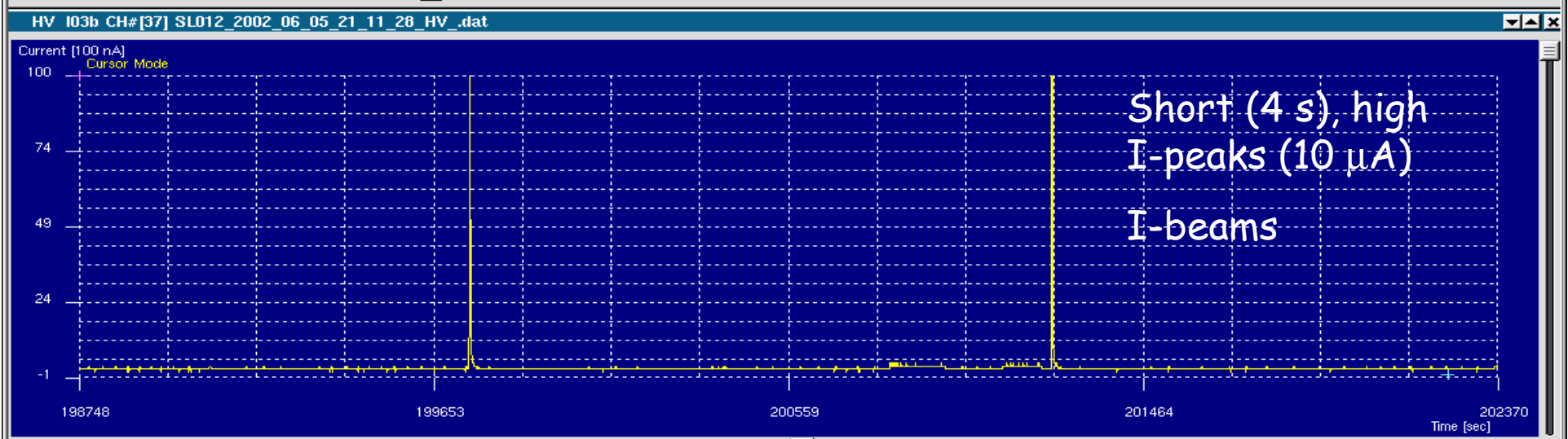
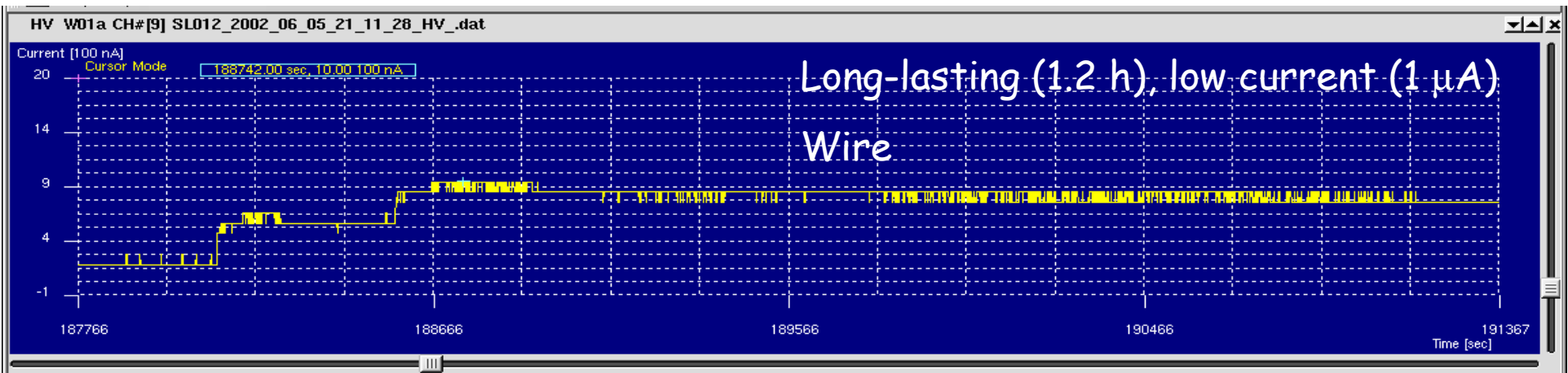
# Current Fluctuations

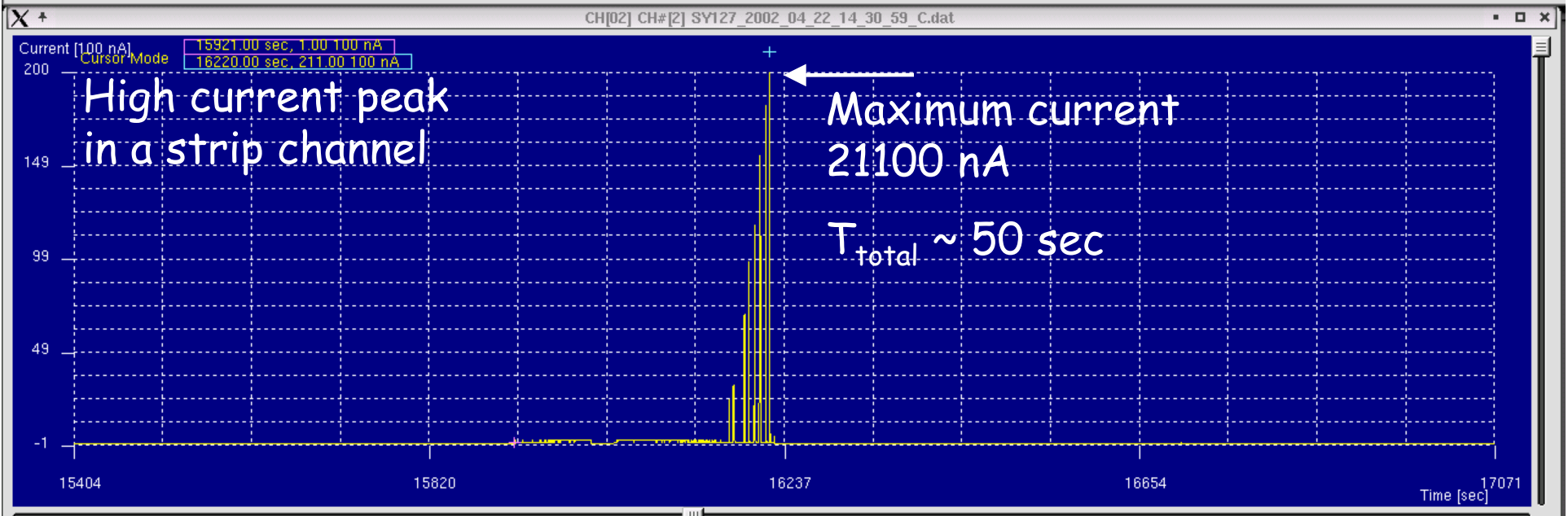
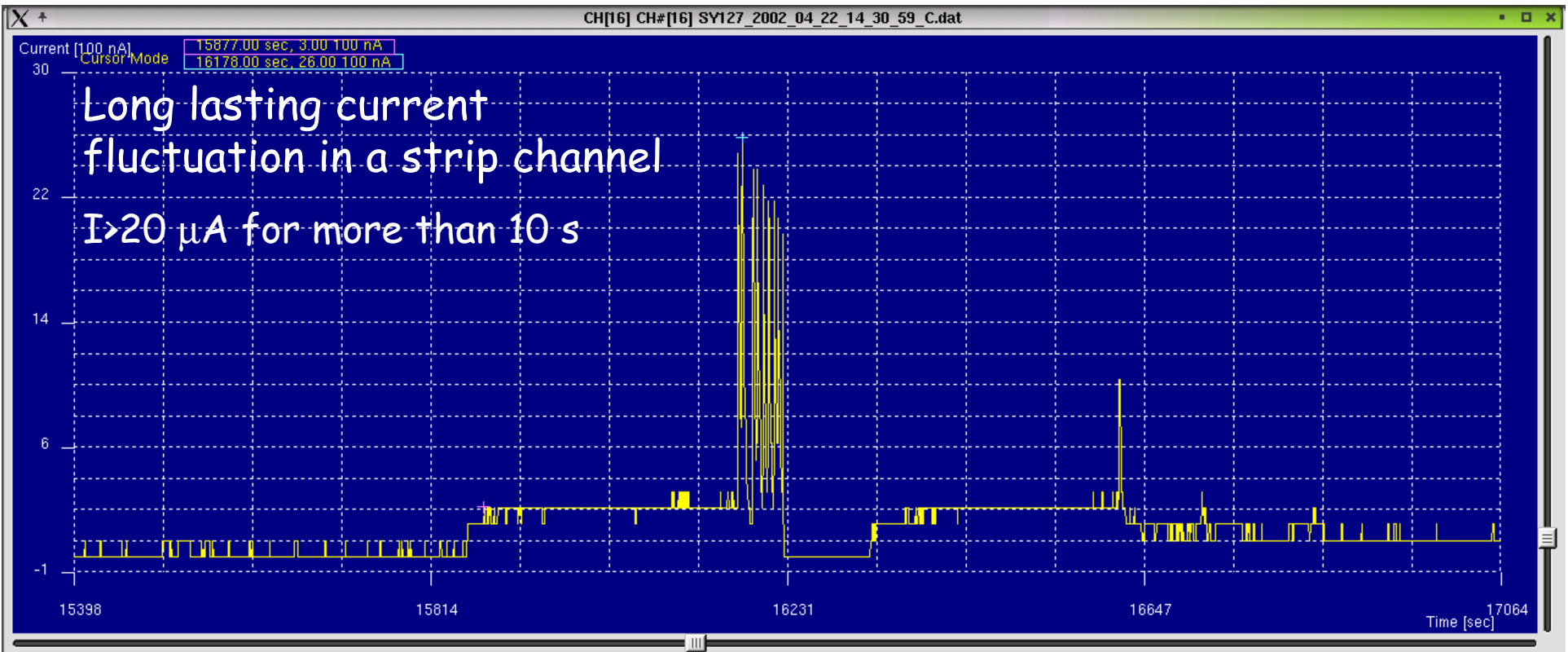


- I-values above 10  $\mu\text{A}$  (wire), 20  $\mu\text{A}$  (strip, cathode)
- Current were high for several seconds, not steady
- Even after many hours of running

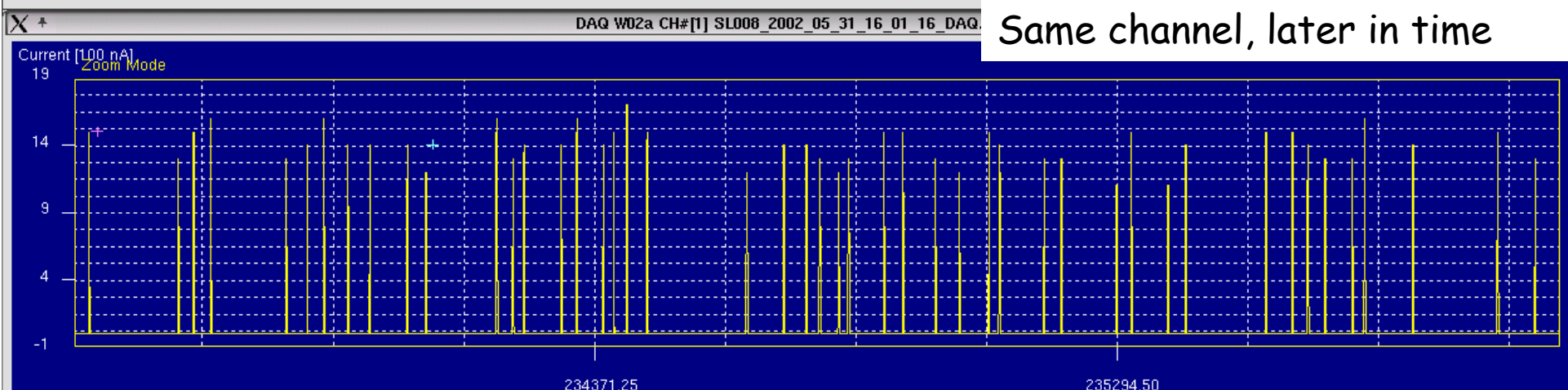
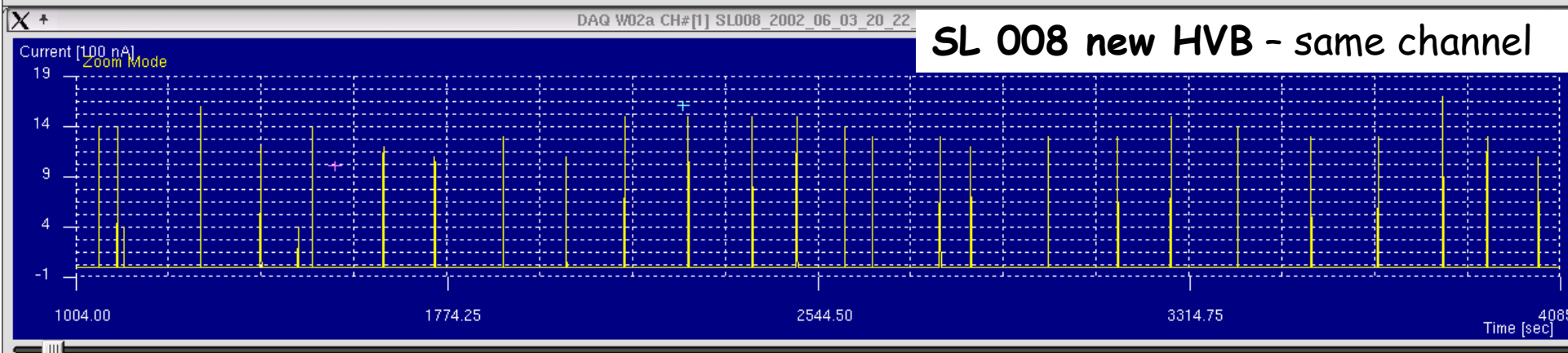
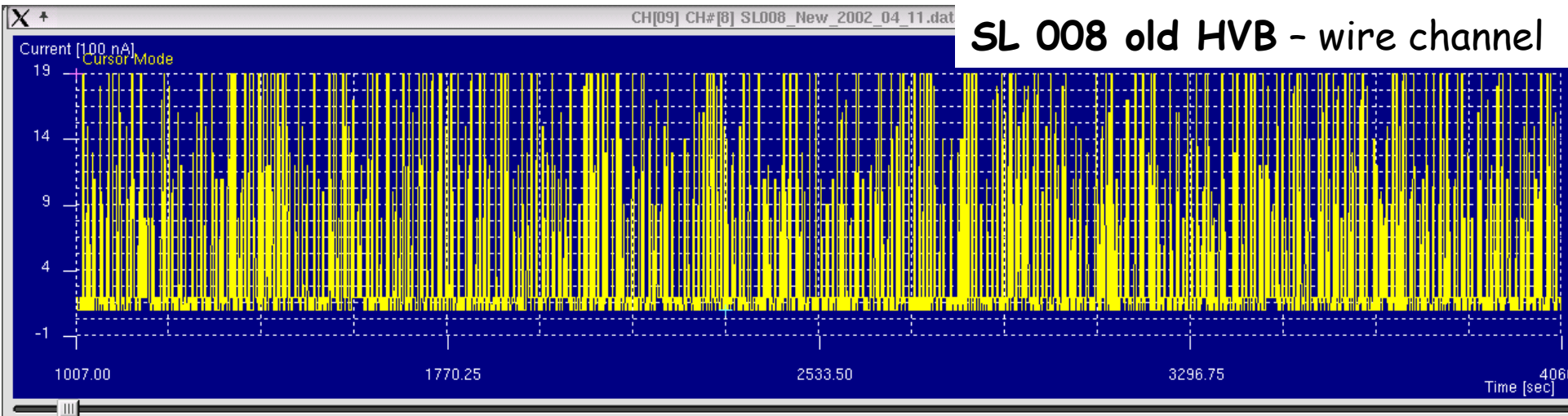














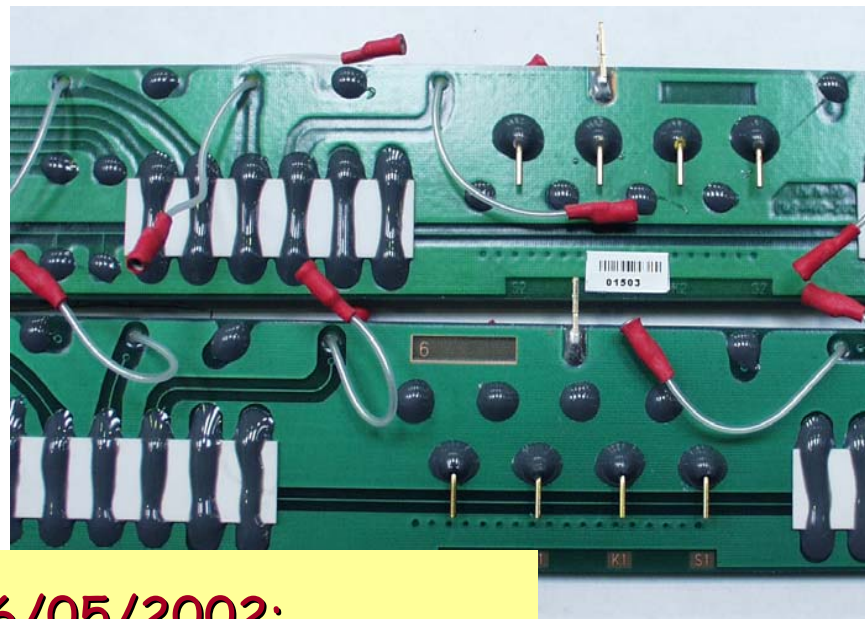


## Changes in May 2002



Visit MdG & MP 06/05-10/05/2002

- ◆ Suspect HVB quality differing
- ◆ 15/16 (already) exchanged HVB because of high current, were optically „not good“
- ◆ During this week 2 more HVB failed. One HVB in a SL which has been running for ~2 weeks.



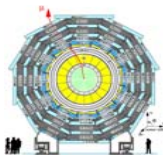
**Failure fraction as of 06/05/2002:**

16 failed HVB / 228 tested HVB = **7%**

10 HVB sent to Marco (see Marco's talk)

**Diagnosis:** If such a faulty HVB is in the SL - relevant board seems „unstable“

A potential search tool: constant-current option can cause a short in the board.



## HVB cont.



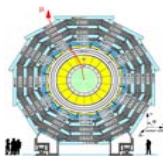
- ◆ Decision by the collaboration 15/05/2002 to replace all HVB installed so far and re-cable
- ◆ Status 07/06/2002: 16/22 SL have been re-done, all HVB were removed and optically inspected
- ◆ Speed: roughly 14 SL in 2.5 weeks. Remaining 6 SL approx. in a week

Replacement fraction: 75%  
based on visual inspection only

Visual inspection of (stored) HVB: 446/1014 HVB = 66%

HVB Material in Aachen: sufficient for 30 SL, finished ~mid July

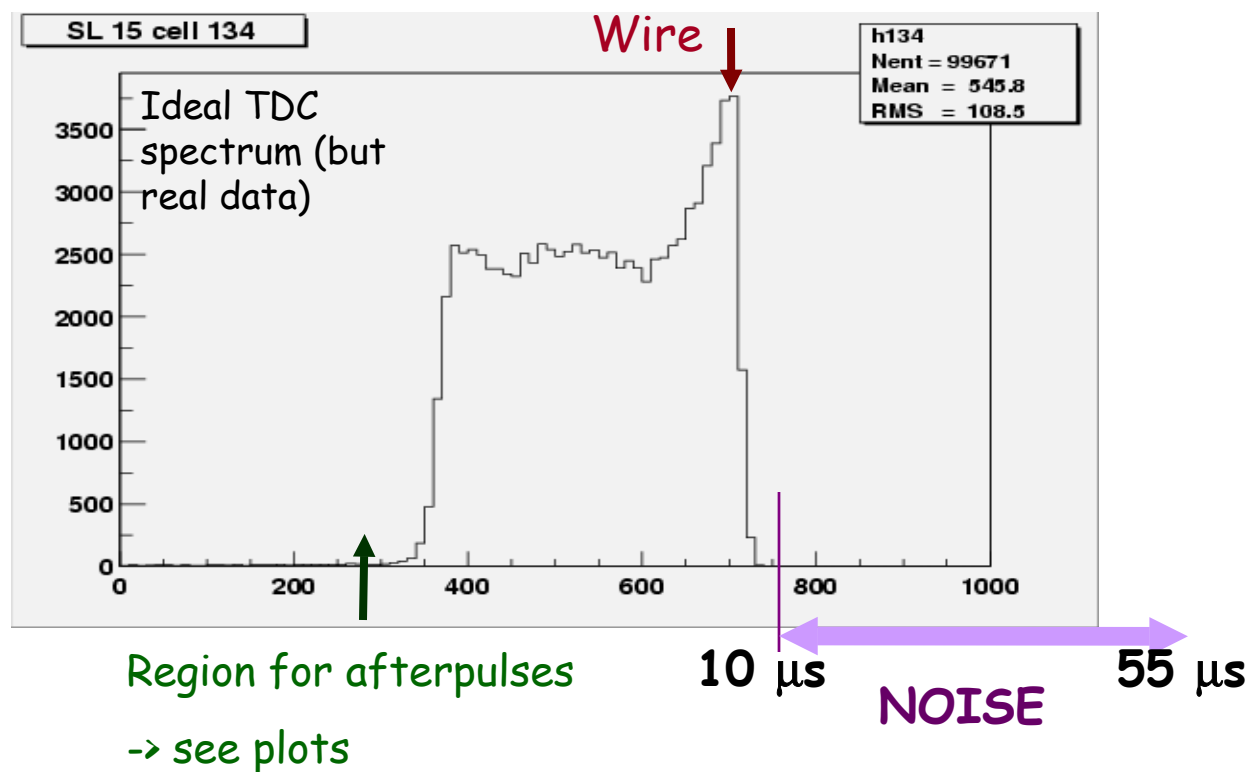
➔ HV training of 10 SL with new HVB went very smooth.

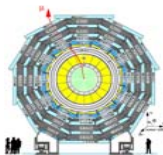


# Cosmics Data Taking



Start „mass-production“ after better understanding of **noise sources**  
power supply grounding, cable routing inside the SL, Slow-Ctrl.cable spacing  
6 SL (with new HVB) completed cosmics data taking  
Determination of noise, efficiencies

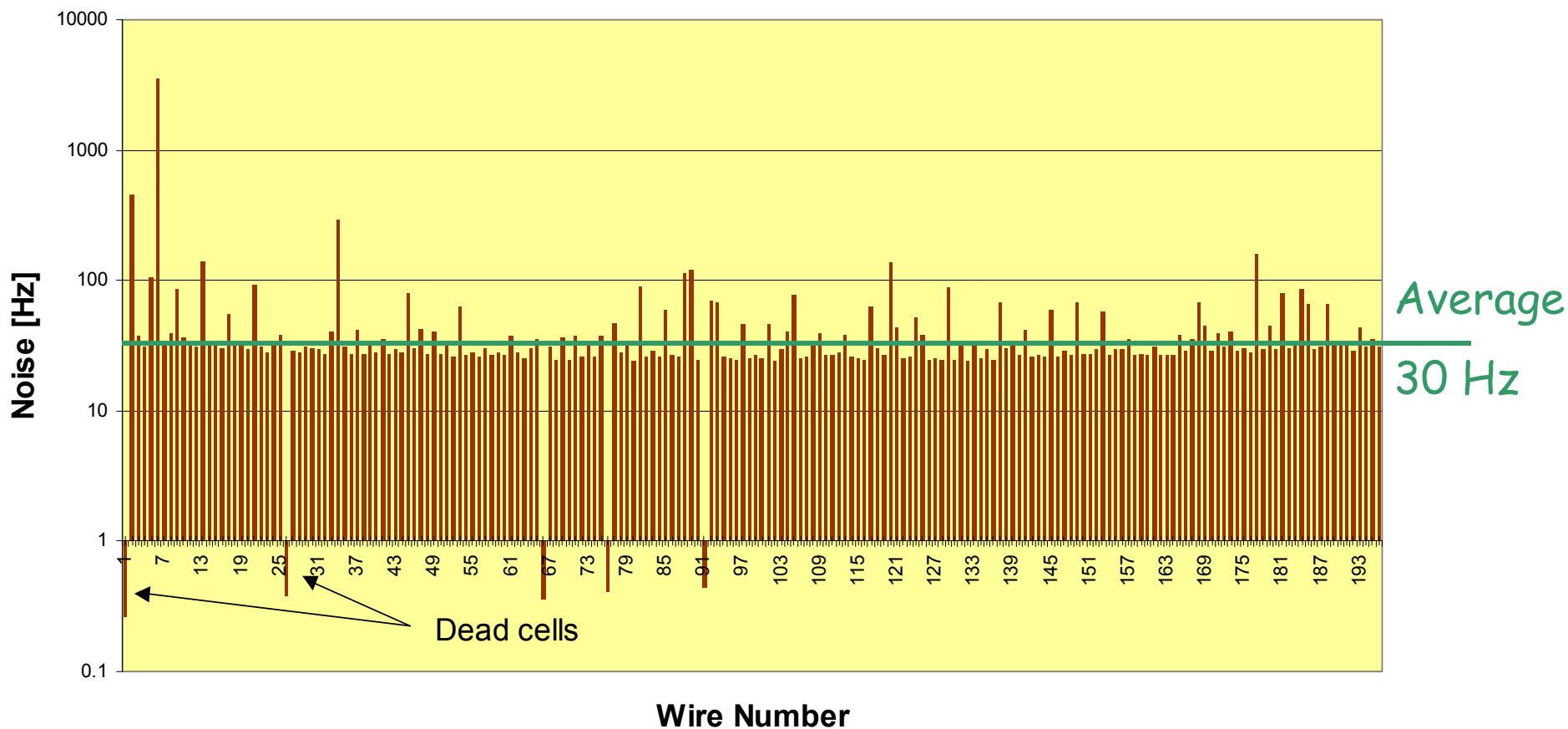




# A Typical Noise Distribution



## SL 013 (phi) Noise Distribution

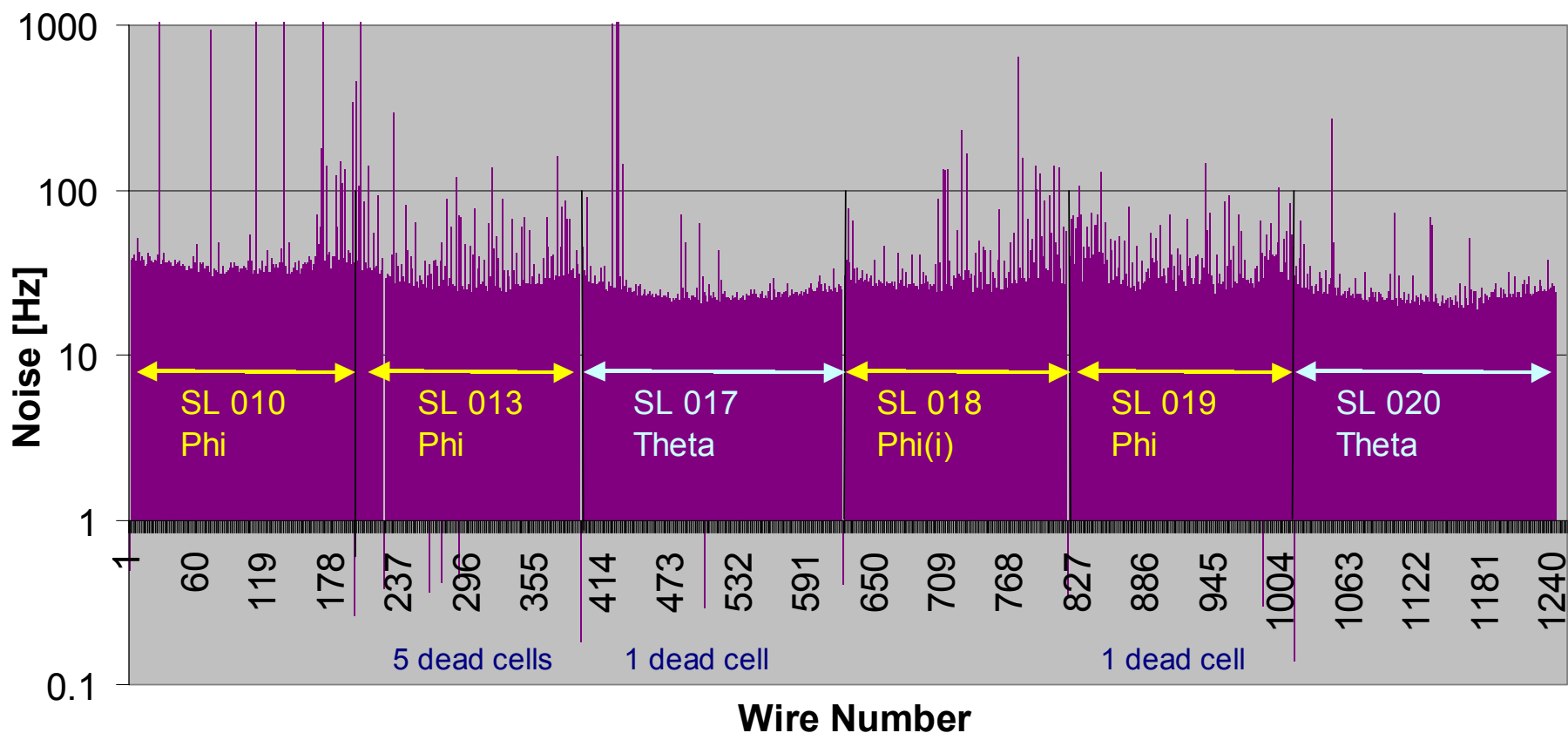




# Noise first 6 SL

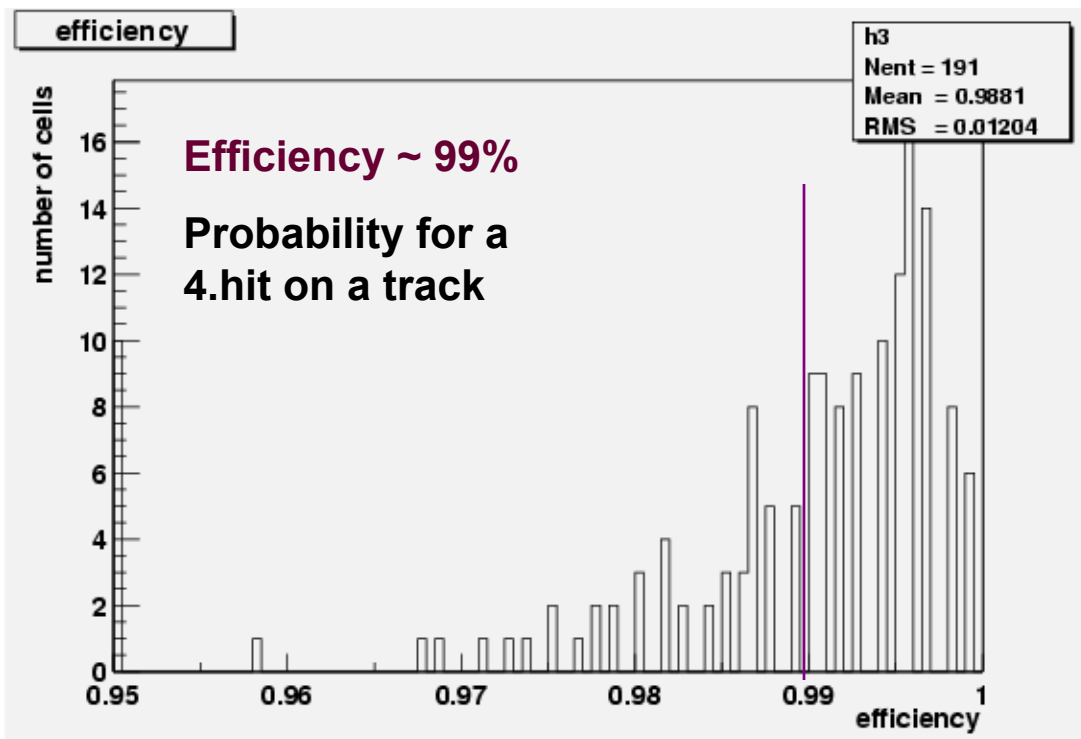
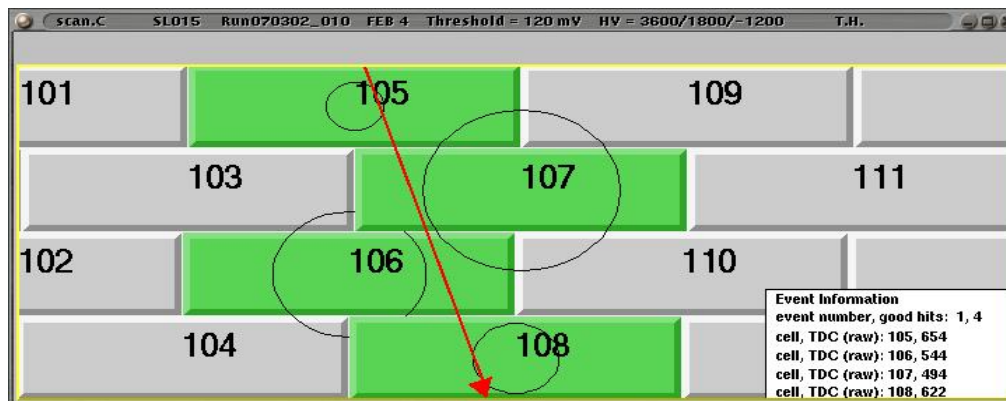


## Noise Distribution SL 010, 013, 017, 018, 019, 020





# Efficiency calculation



Efficiency  $\varepsilon =$

$\frac{\# \text{ hits on track}}{\# \text{ expected hits}}$

Geometrical inefficiencies  
due to I-beams subtracted

Dead cells stay „off“