



FIC/LIC PSB DUMP First Results

E. Nebot, B. Dehning, E. Effinger, V. Grishin.

Description

Test of LIC/FIC on Dump line of PSB

CHI = LIC

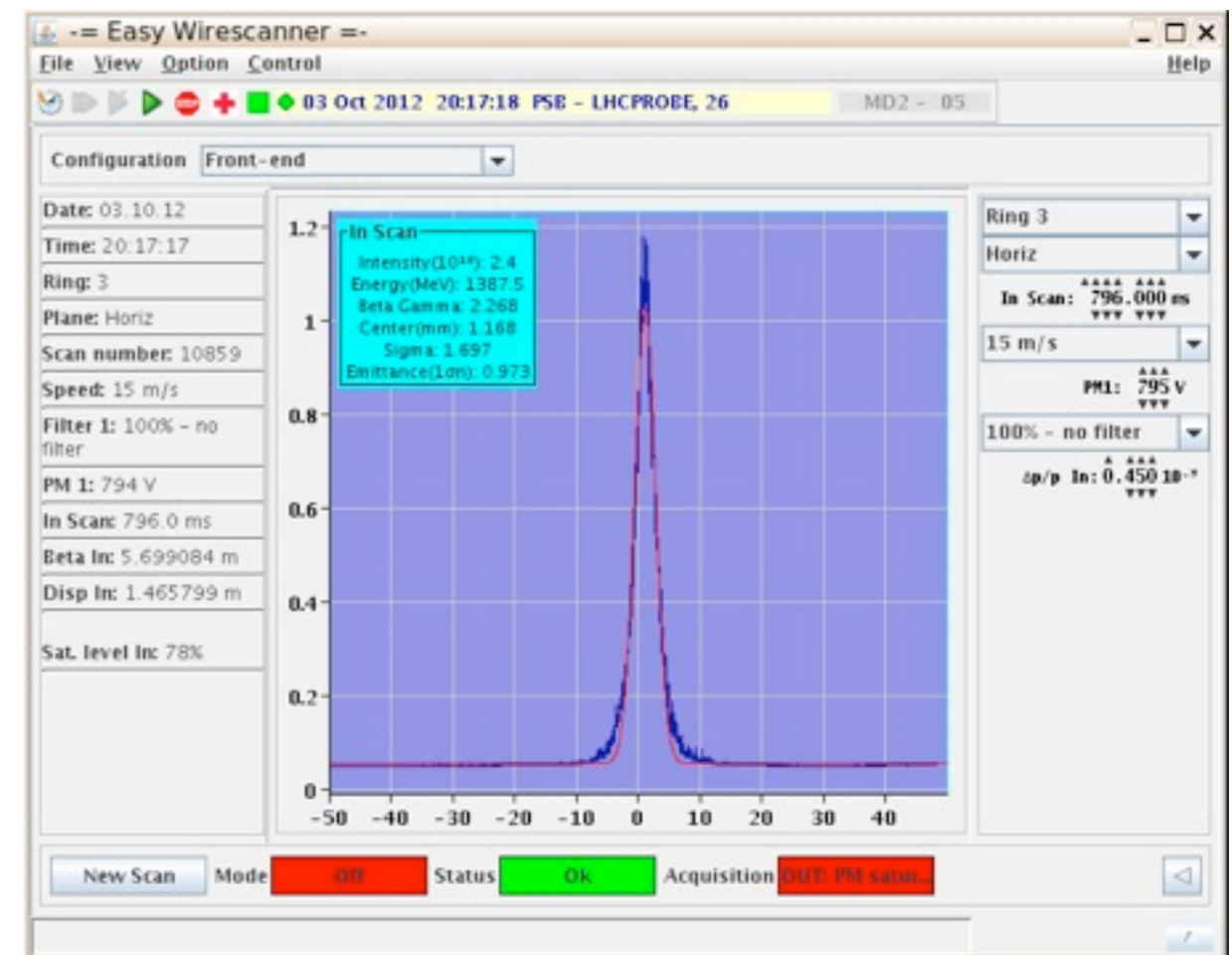
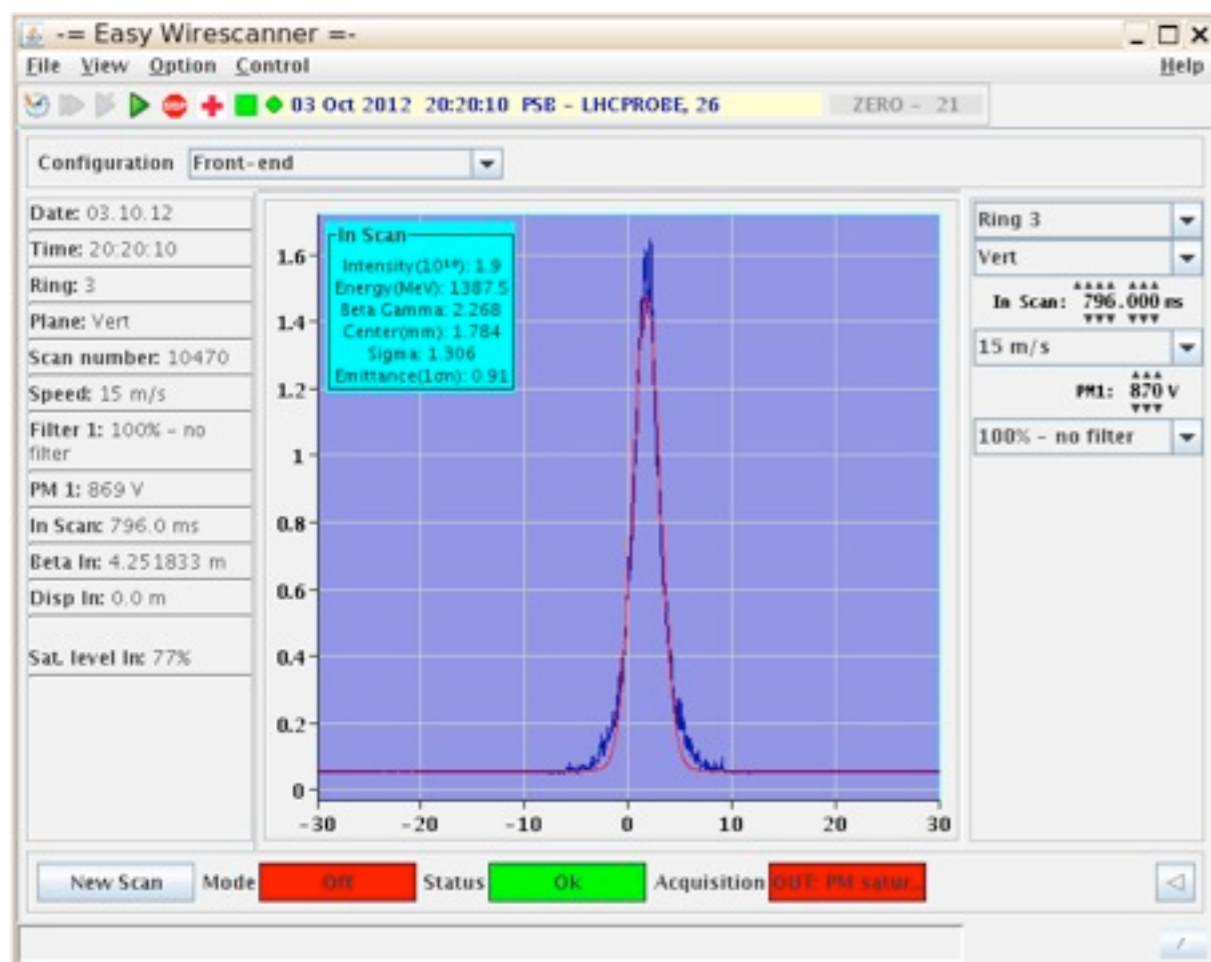
CH2 = FIC

Beam conditions

Single (probe) bunch: $I = (0.5-2.0) E+10$

Beam sizes (measured by WS):

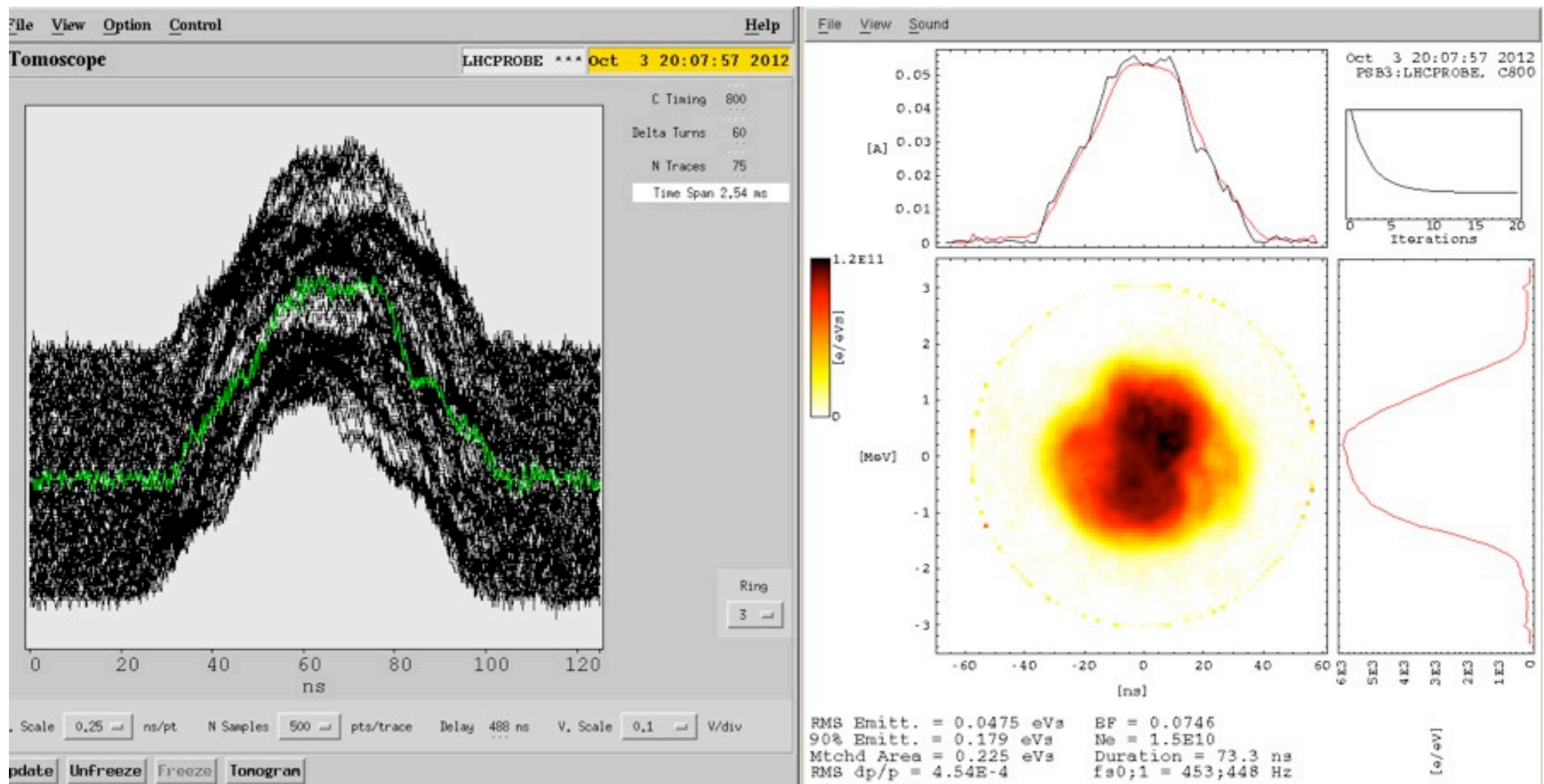
- Vertical ~ 1.3 mm
- Horizontal ~ 1.6 mm



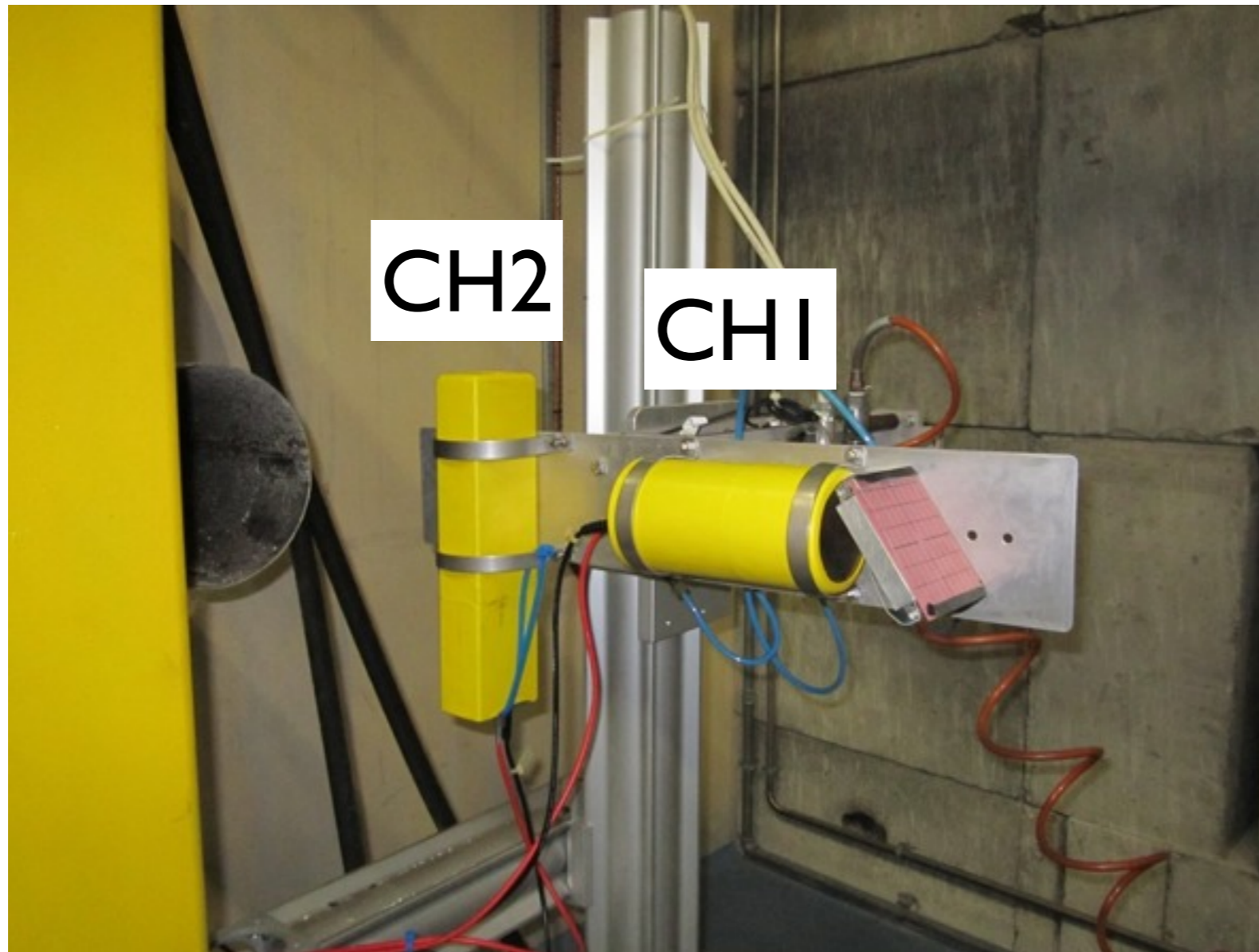
Beam conditions

Single (probe) bunch: $I = (0.5-2.0) E+10$

- Bunch length ~ 70 ns



Detector setup



Surface setup

Signals measured on scope
50 Ω terminations
(presented on this document)



Integration with LHC
electronics (results not
included in this
document)



Procedure

- HV scan (shots taken on scope):
 - Intensities on the range $1-2 \text{ E}+10 \text{ p}$
 - Voltage increased from 200V up to 2kV in steps of 200 V

- Intensity scan (on scope + integration). In this document only results takes on scope are presented:
 - Bias voltage fixed at nominal 1500V
 - Intensities ranging from $(0.5-5)\text{E}+10$.

HV scan List of Shots

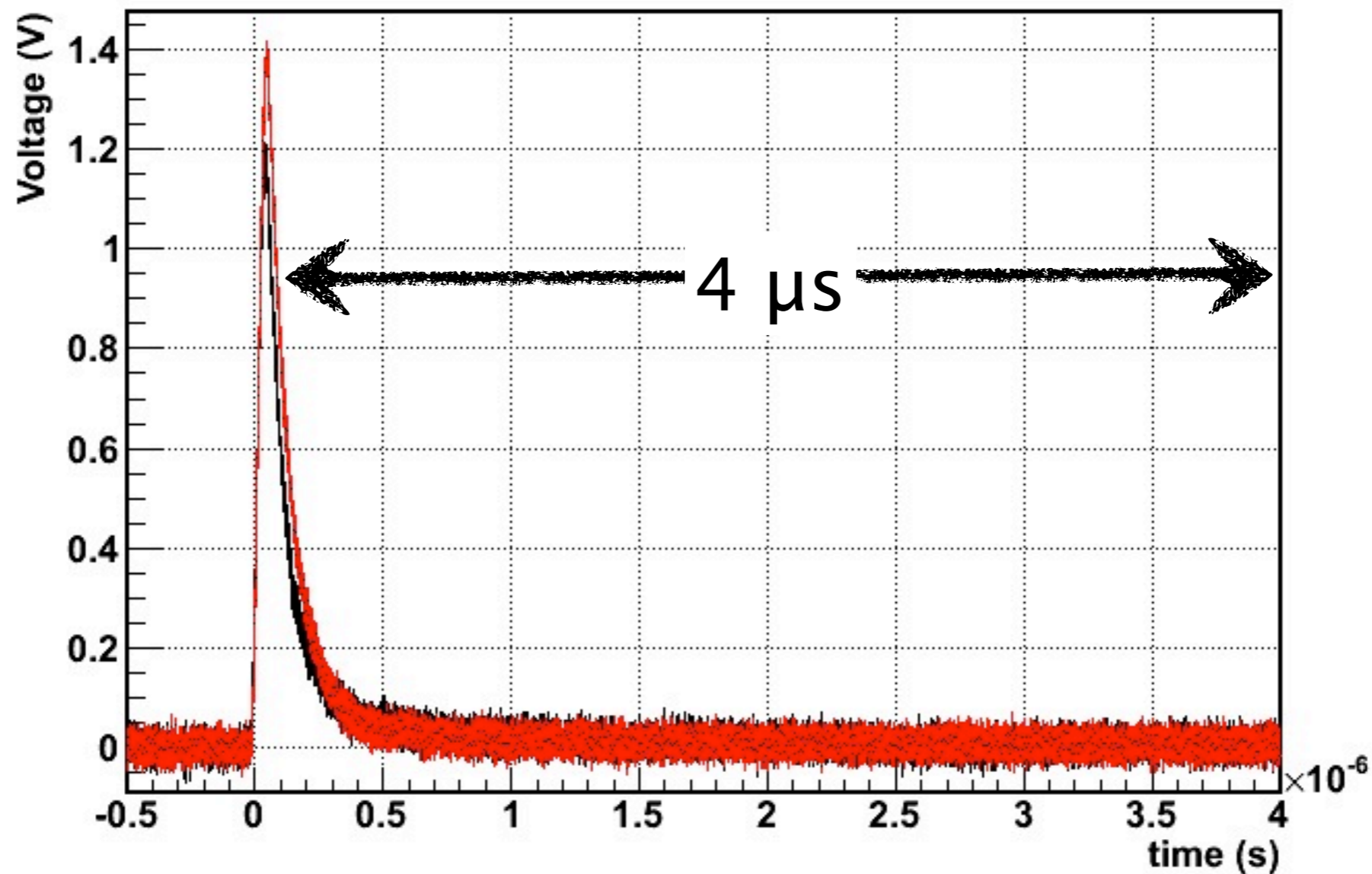
FileName	Att CH1	Att CH2	Intensity (p)	HV (V)
shot100002.txt	20	20	1.09E+10	1500
shot200000.txt	20	20	1.59E+10	1500
shot300000.txt	20	20	1.83E+10	200
shot400000.txt	20	20	1.31E+10	200
shot500000.txt	20	20	1.39E+10	410
shot600000.txt	20	20	1.04E+10	410
shot700000.txt	20	20	1.21E+10	605
shot800000.txt	20	20	8.00E+09	605
shot900000.txt	20	20	1.66E+10	800
shot10_00000.t	20	20	1.50E+10	800
shot11_00000.t	20	20	1.62E+10	1048
shot12_00000.t	20	20	1.43E+10	1048
shot13_00000.t	20	20	1.52E+10	1209
shot14_00000.t	20	20	1.44E+10	1209
shot15_00000.t	20	20	1.74E+10	1401
shot16_00000.t	20	20	1.94E+10	1401
shot17_00000.t	20	20	2.21E+10	1603
shot18_00000.t	20	20	1.47E+10	1603
shot19_00000.t	20	20	1.68E+10	1803
shot20_00000.t	20	20	1.30E+10	1803
shot21_00000.t	20	20	1.33E+10	2000
shot22_00000.t	20	20	1.47E+10	2000

I scan List of Shots

FileName	atten ch1 (dB)	atten ch2 (dB)	I (p)	HV
shot23_00000.txt	20	20	5.70E+09	1500
shot24_00000.txt	20	20	6.40E+09	1500
shot25_00000.txt	20	20	6.20E+09	1500
shot26_00000.txt	20	20	6.10E+09	1500
shot27_00000.txt	20	20	1.01E+10	1500
shot28_00000.txt	20	20	1.22E+10	1500
shot29_00000.txt	20	20	9.00E+09	1500
shot30_00000.txt	20	20	9.10E+09	1500
shot31_00000.txt	20	20	1.16E+10	1500
shot32_00000.txt	20	20	1.04E+10	1500
shot33_00000.txt	20	20	1.62E+10	1500
shot34_00000.txt	20	20	1.53E+10	1500
shot35_00000.txt	20	20	1.49E+10	1500
shot36_00000.txt	20	20	1.94E+10	1500
shot37_00000.txt	20	20	2.24E+10	1500
shot38_00000.txt	20	20	1.63E+10	1500
shot39_00000.txt	20	20	2.39E+10	1500
shot40_00000.txt	20	20	2.21E+10	1500

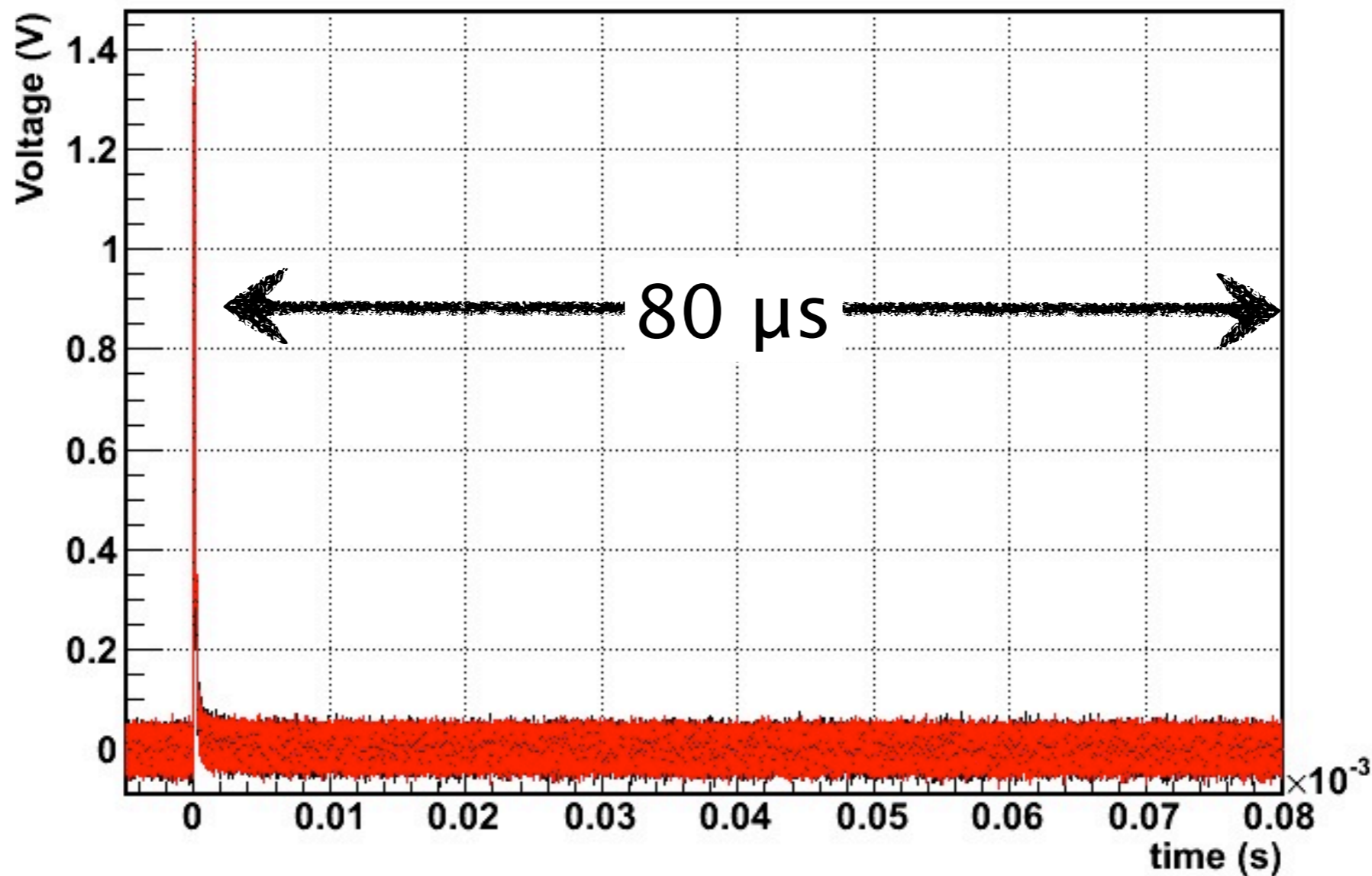
Pulse shapes I (Low intensity)

signals in 4 μs window
 $I = 0.69\text{E}+10$



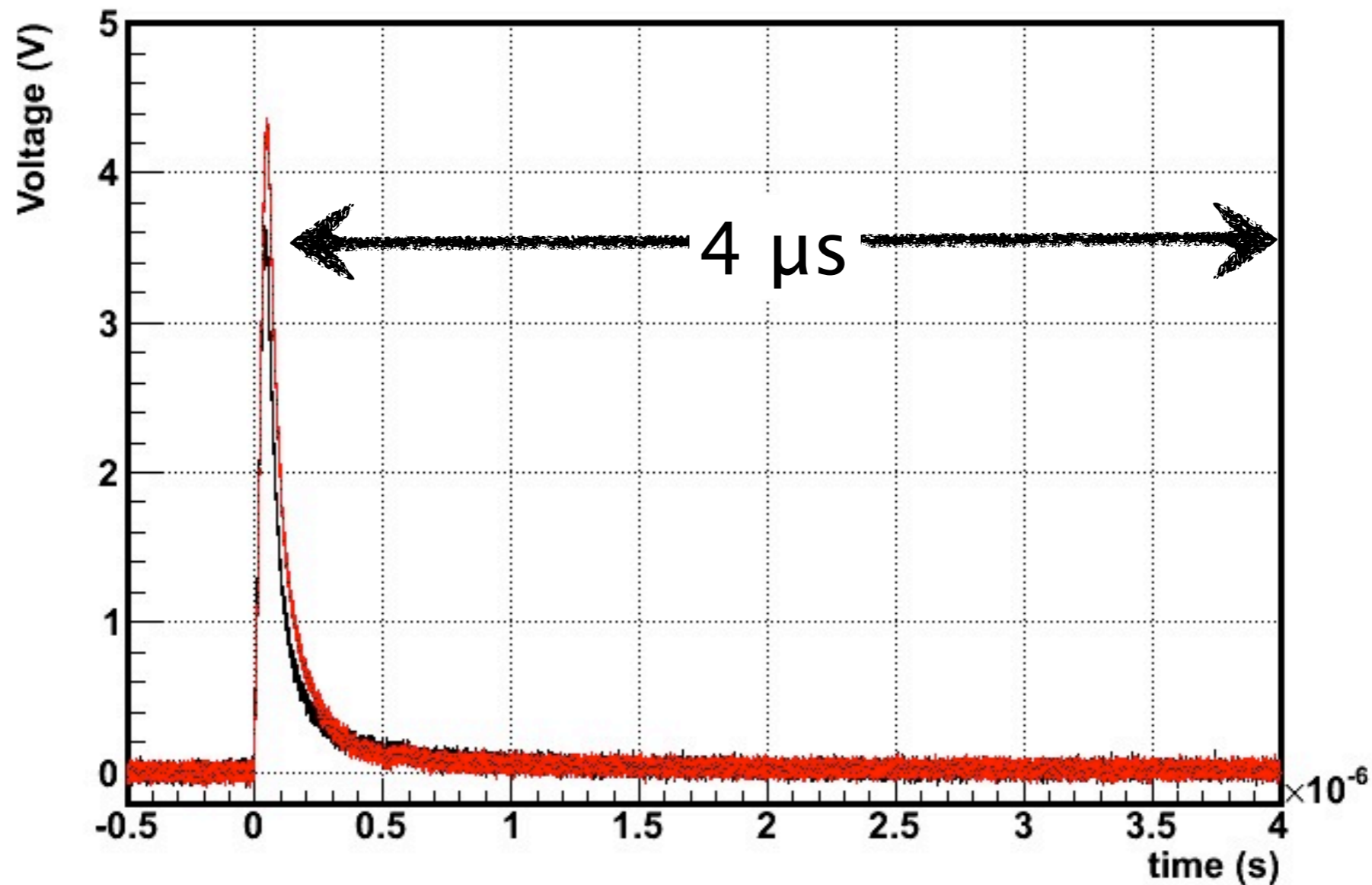
Pulse shapes I (Low intensity)

signals in 80 μs window (almost all charges collected)
 $I = 0.69\text{E}+10$



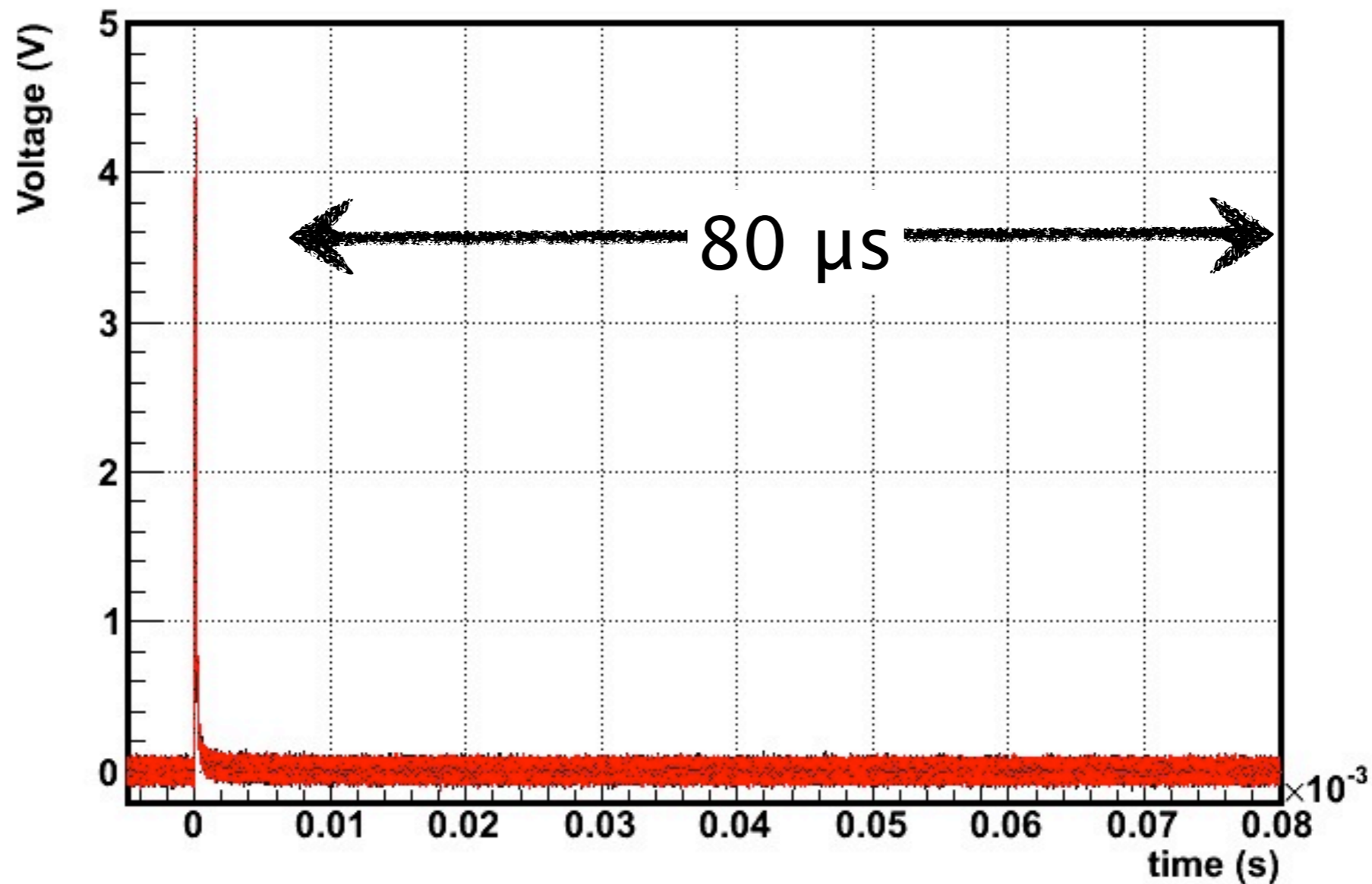
Pulse shapes II (High intensity)

signals in 4 μs window
 $I = 2.2\text{E}+10$



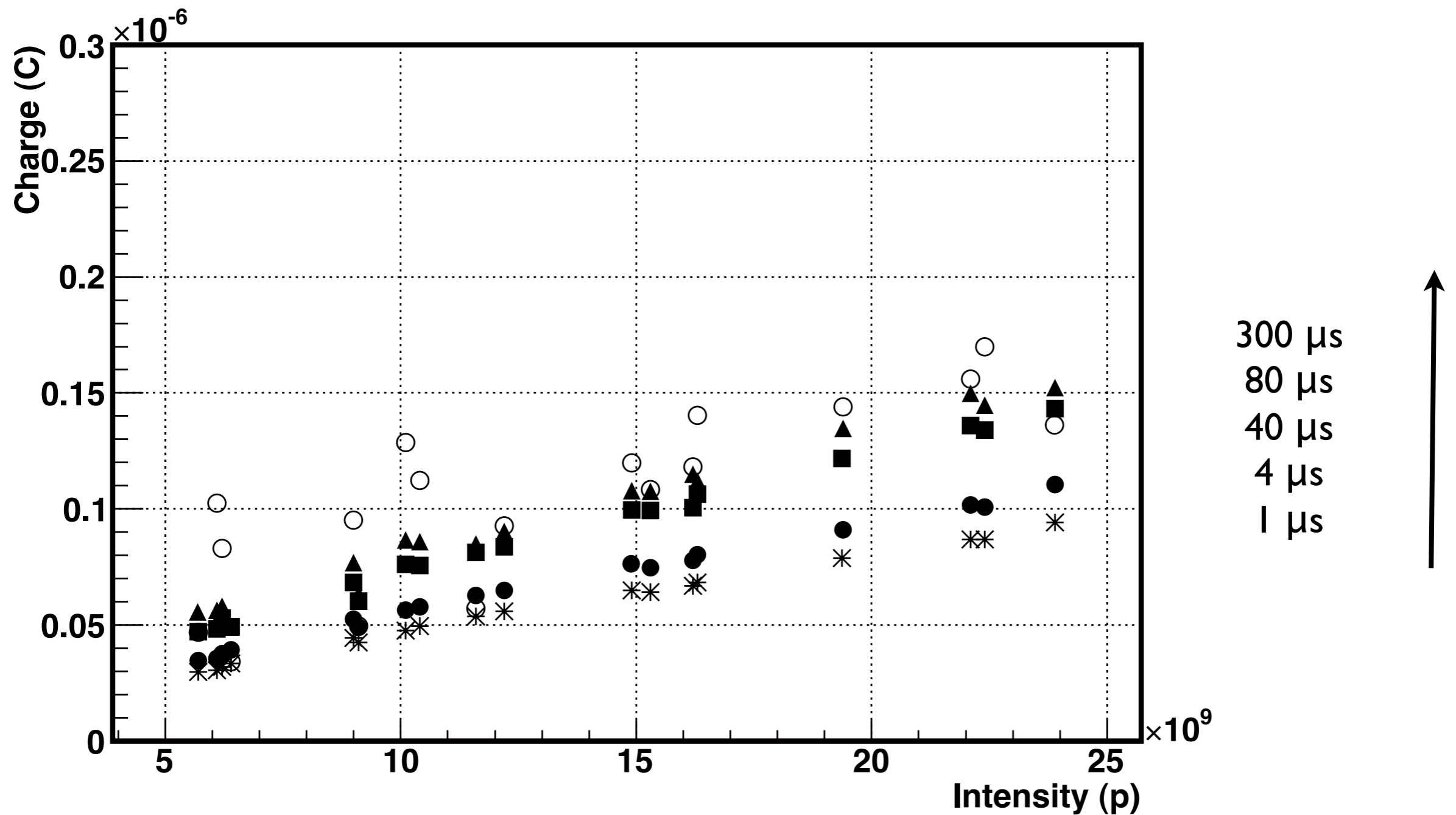
Pulse shapes II (High intensity)

signals in 4 μs window
 $I = 2.2\text{E}+10$



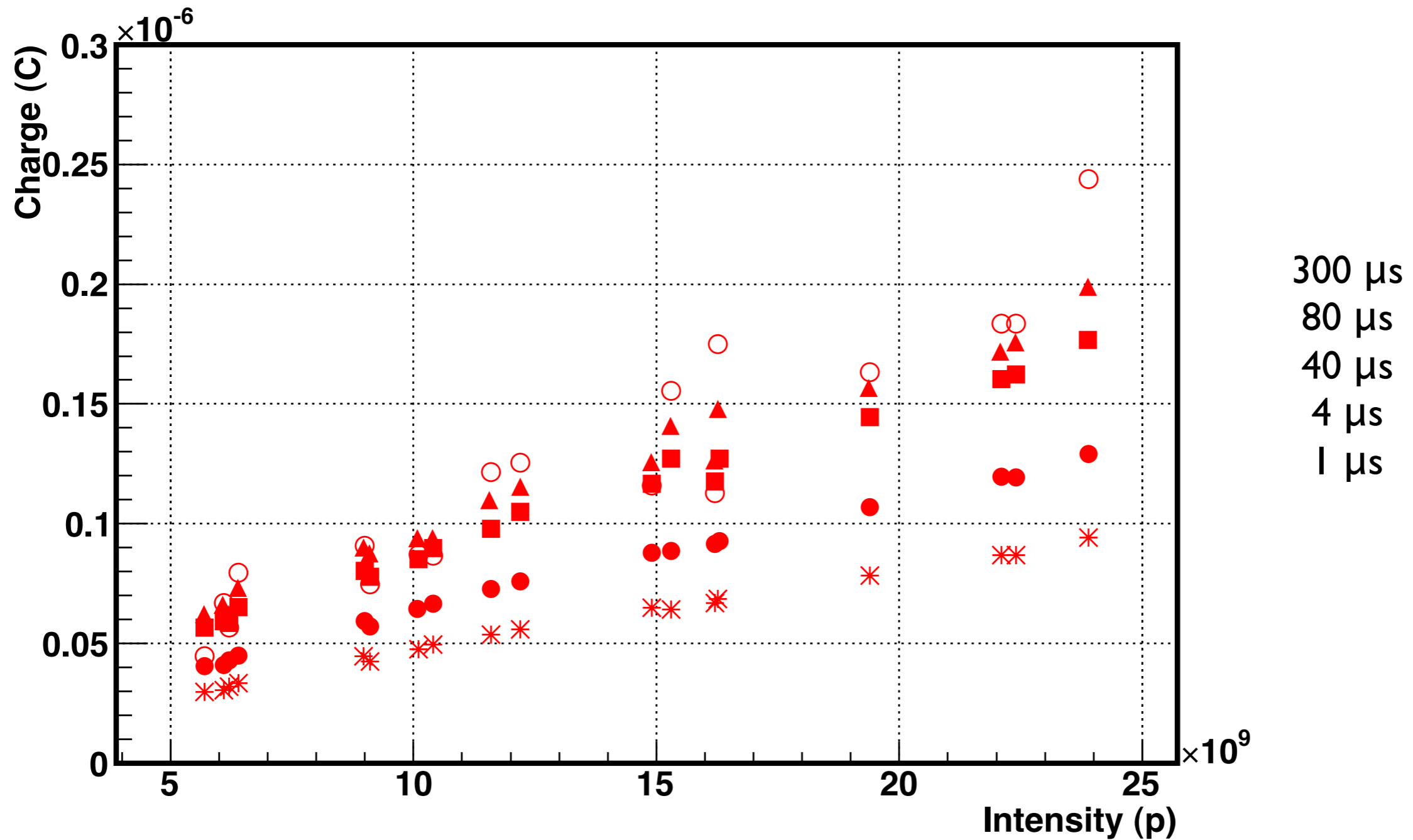
Integrated signals. I scan

Integrated signals (CH1) in different windows



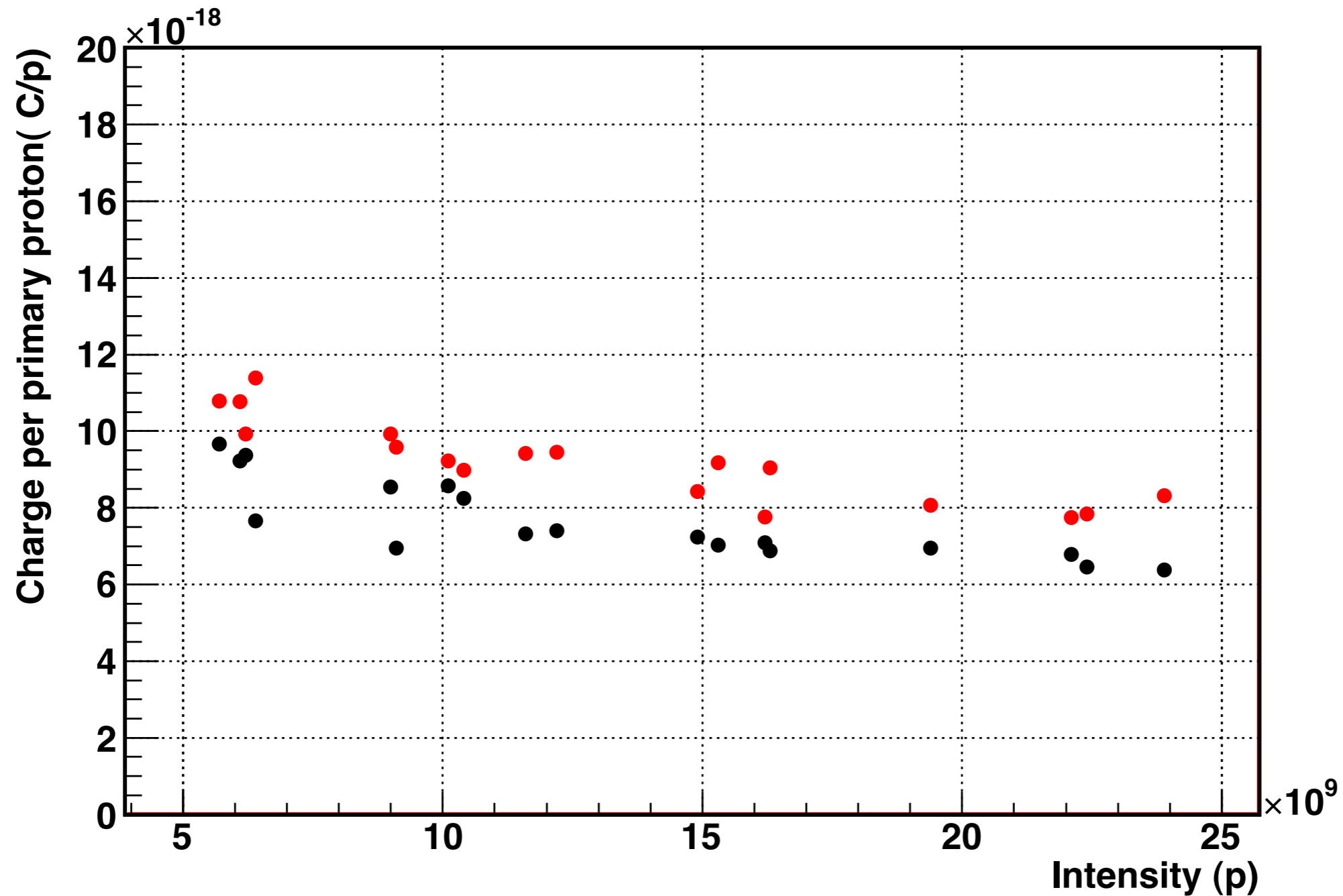
Integrated signals. I scan

Integrated signals (CH2) in different windows



Integrated signals. I scan

Integrated signals (80 μ s) per primary proton.
Decreasing tendency attributed to space charge



HV scan

Integrated signals (80 μs) per primary proton.
Roughly flat response between 800 and 1800 V

