NEW TeV SBD

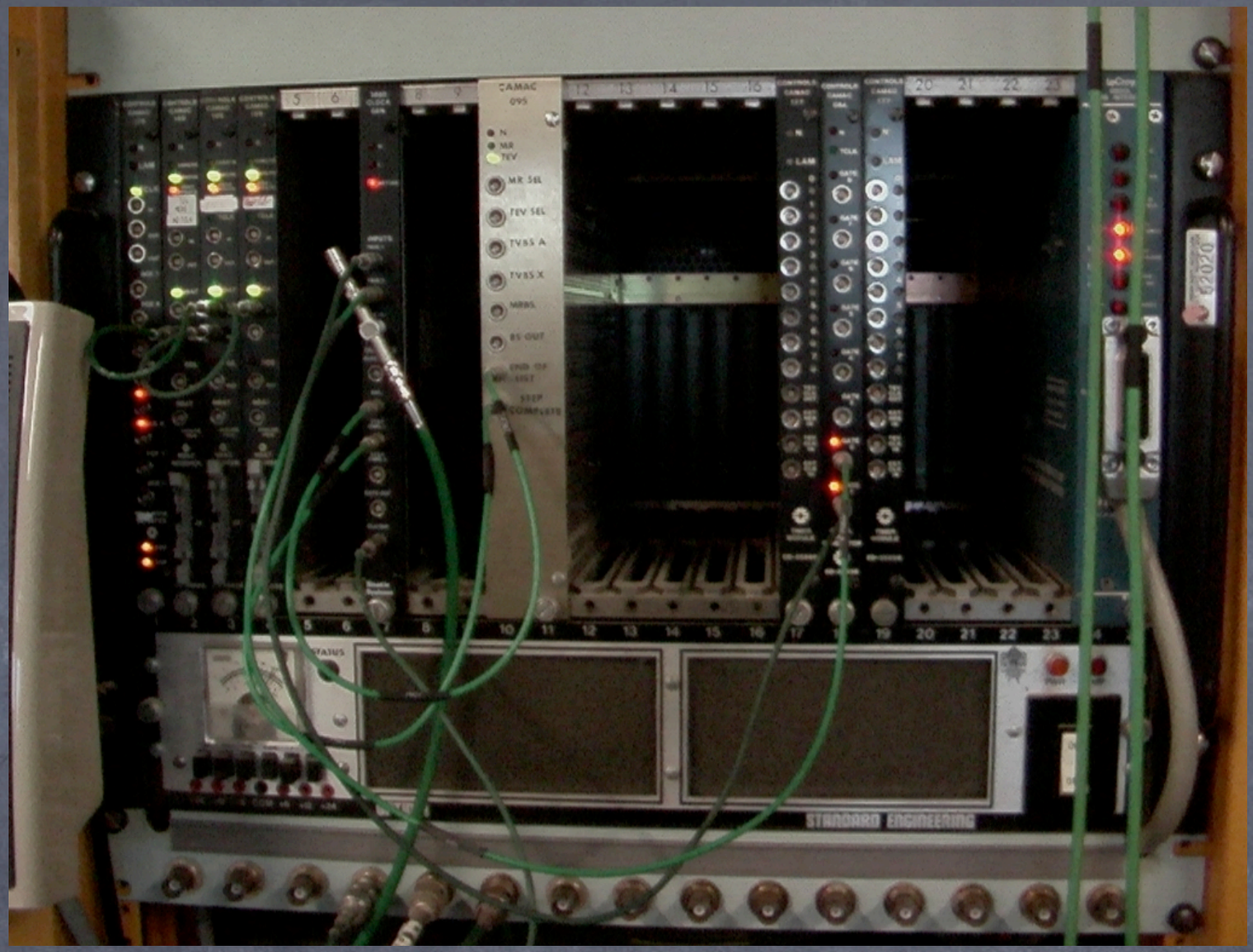
Inspiration: Alvin Tollestrup Stephen Pordes

Hardware: Brian Fellenz

Software: Bob Flora (SBD) Fritz Dejongh (Viewer)

Adam Para (Emittance) Eugene Lorman (AcNET)

Bob Flora 2004/07/21

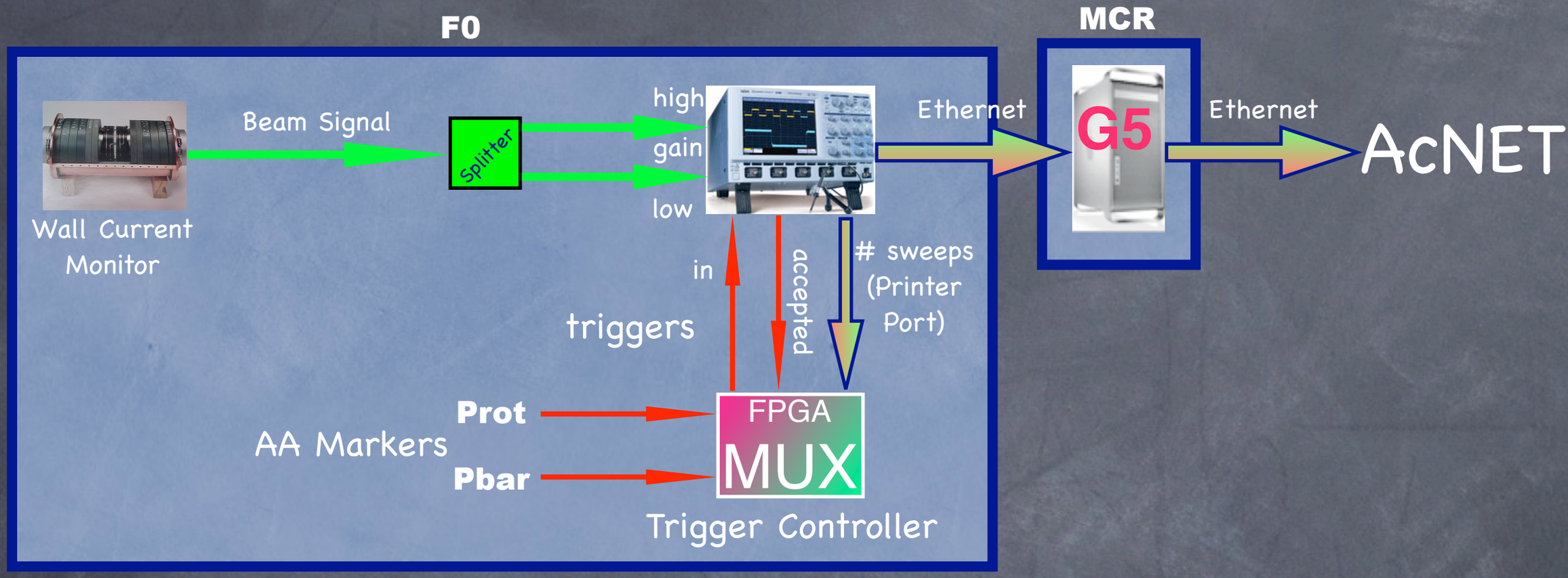


- OLD Hardware

  LeCroy 9384 1 GHz 2 GS/s x 8 bits GPIB

  CAMAC... Crate Controller Cards GPIB

  G4



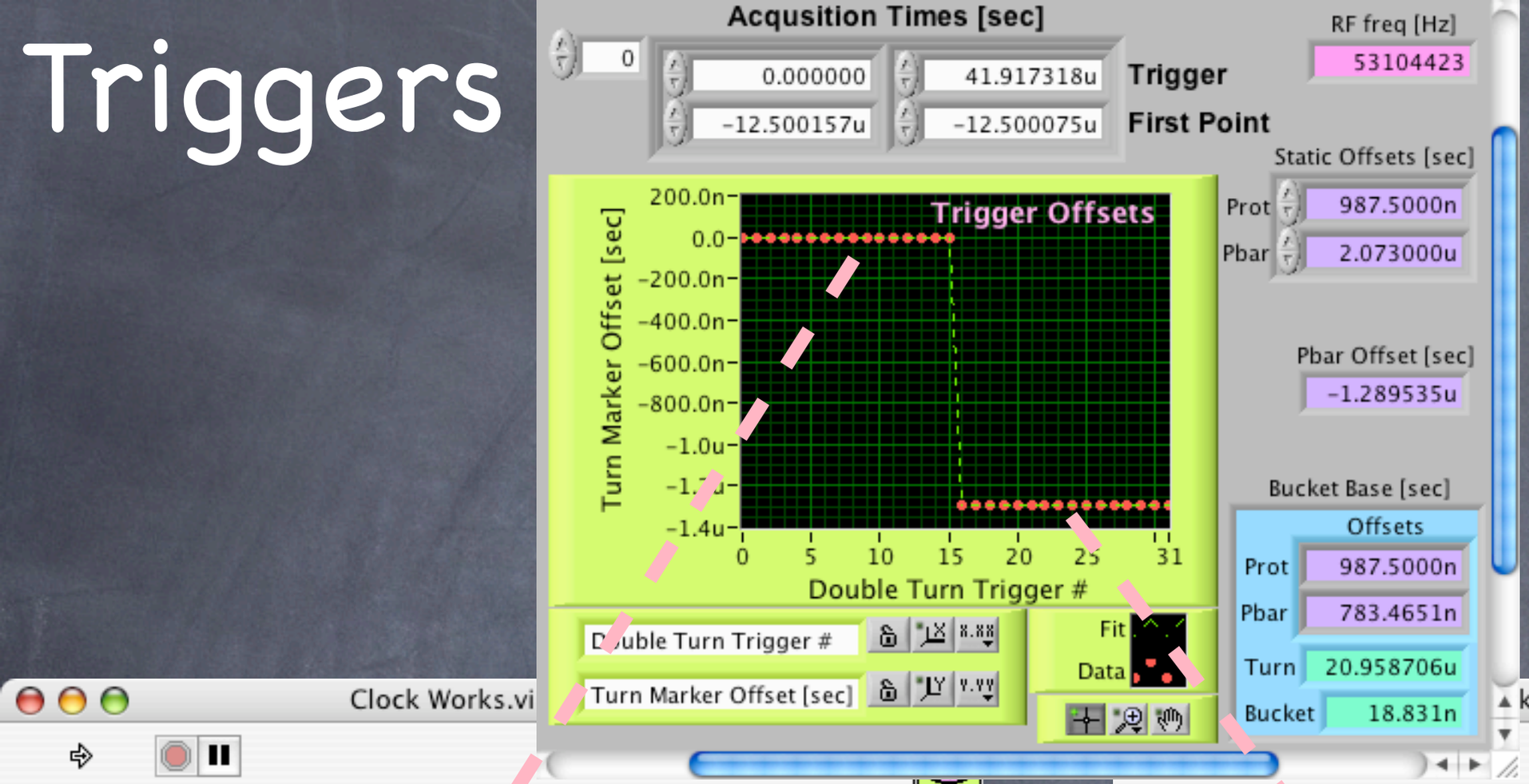
NEW Hardware

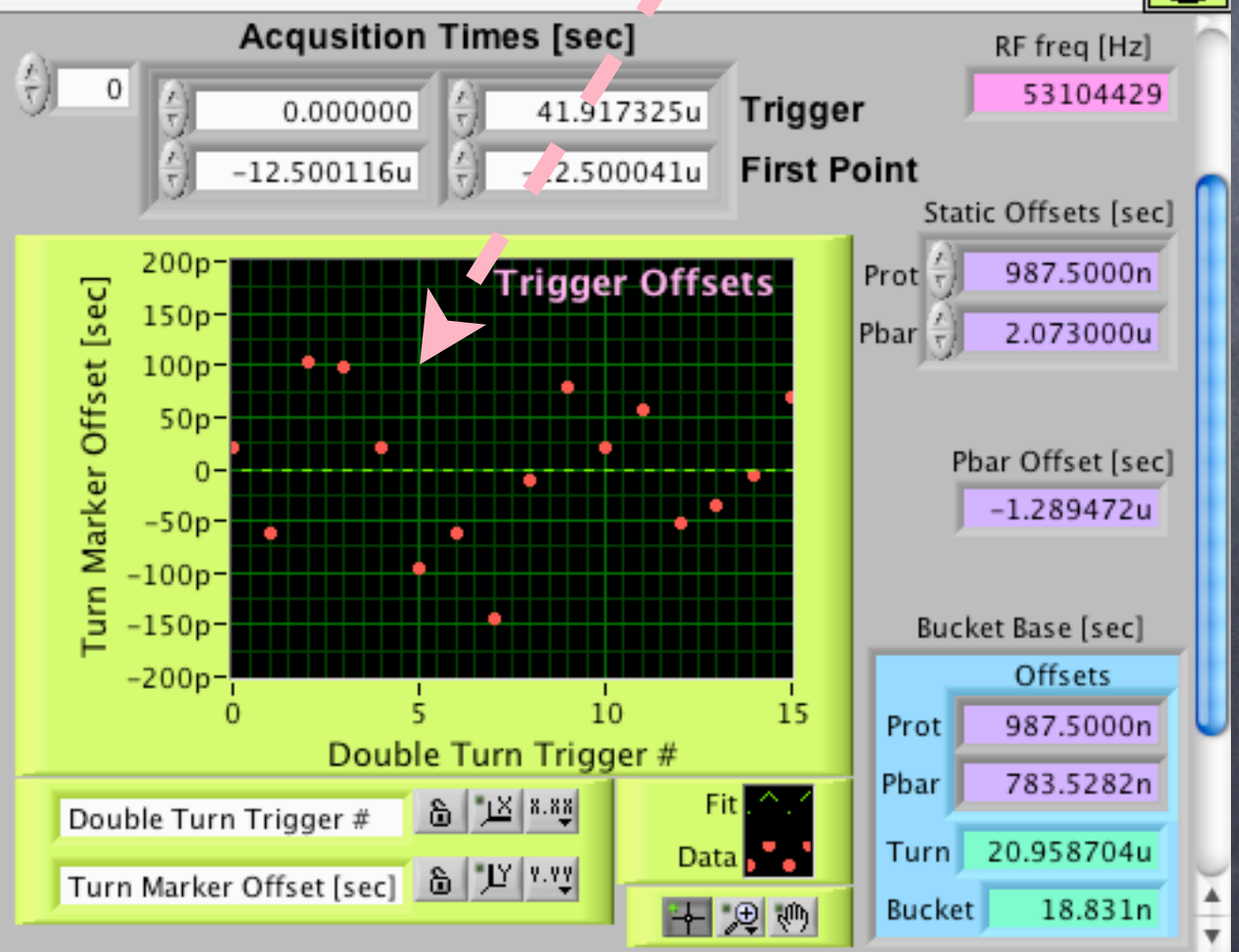
LeCroy 6200 2 GHz 5 GS/s x 8 bits Ethernet

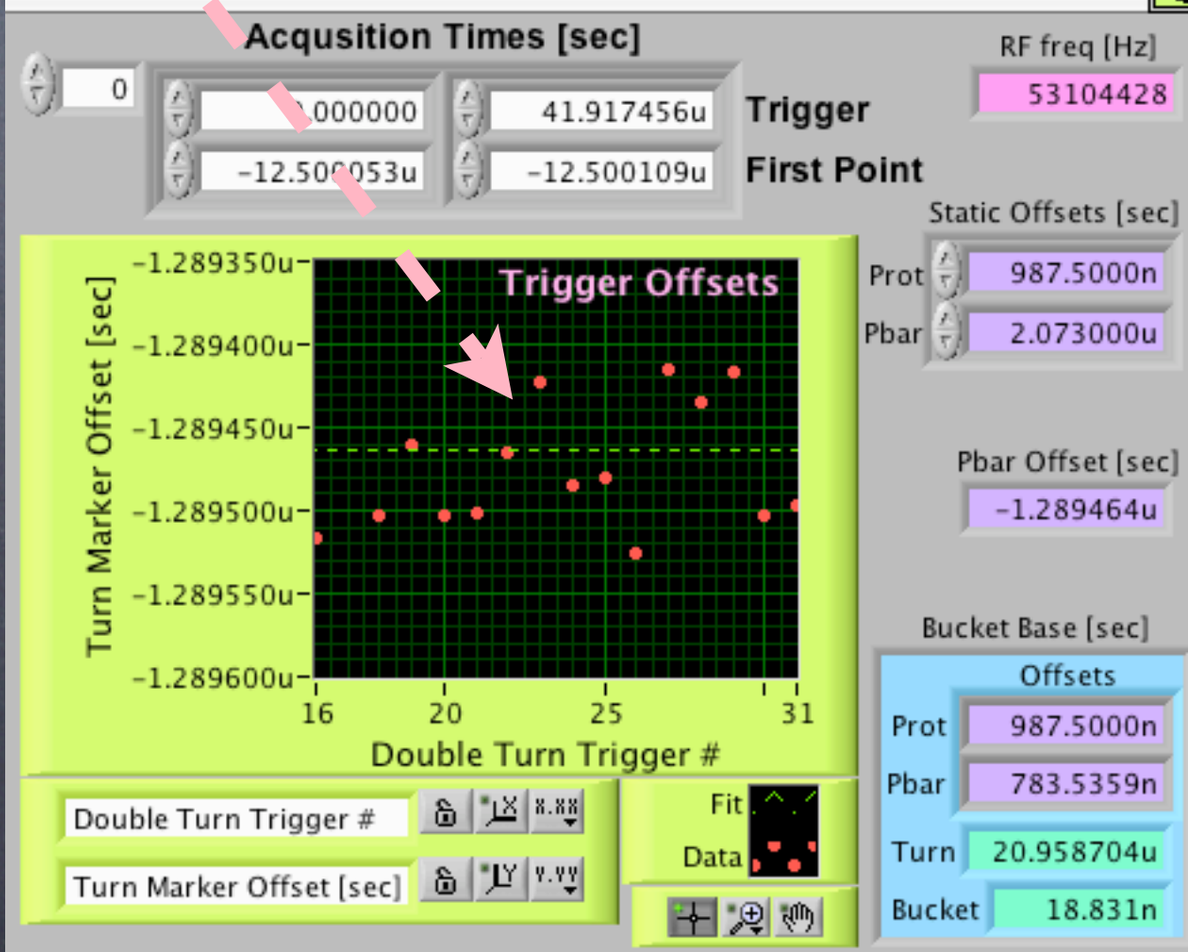
Fellenz Trigger MUX

Dual Processor G5

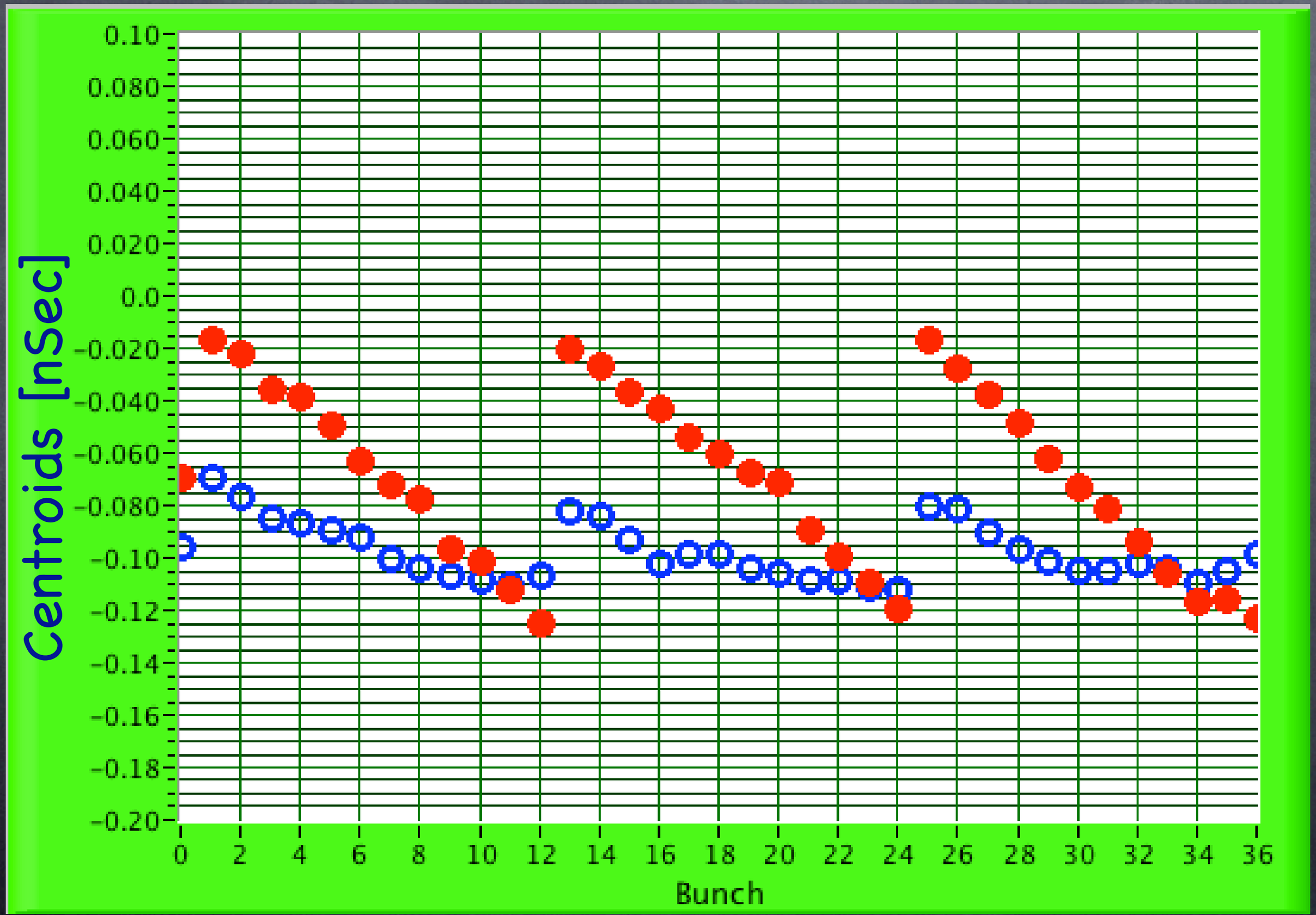
Triggers

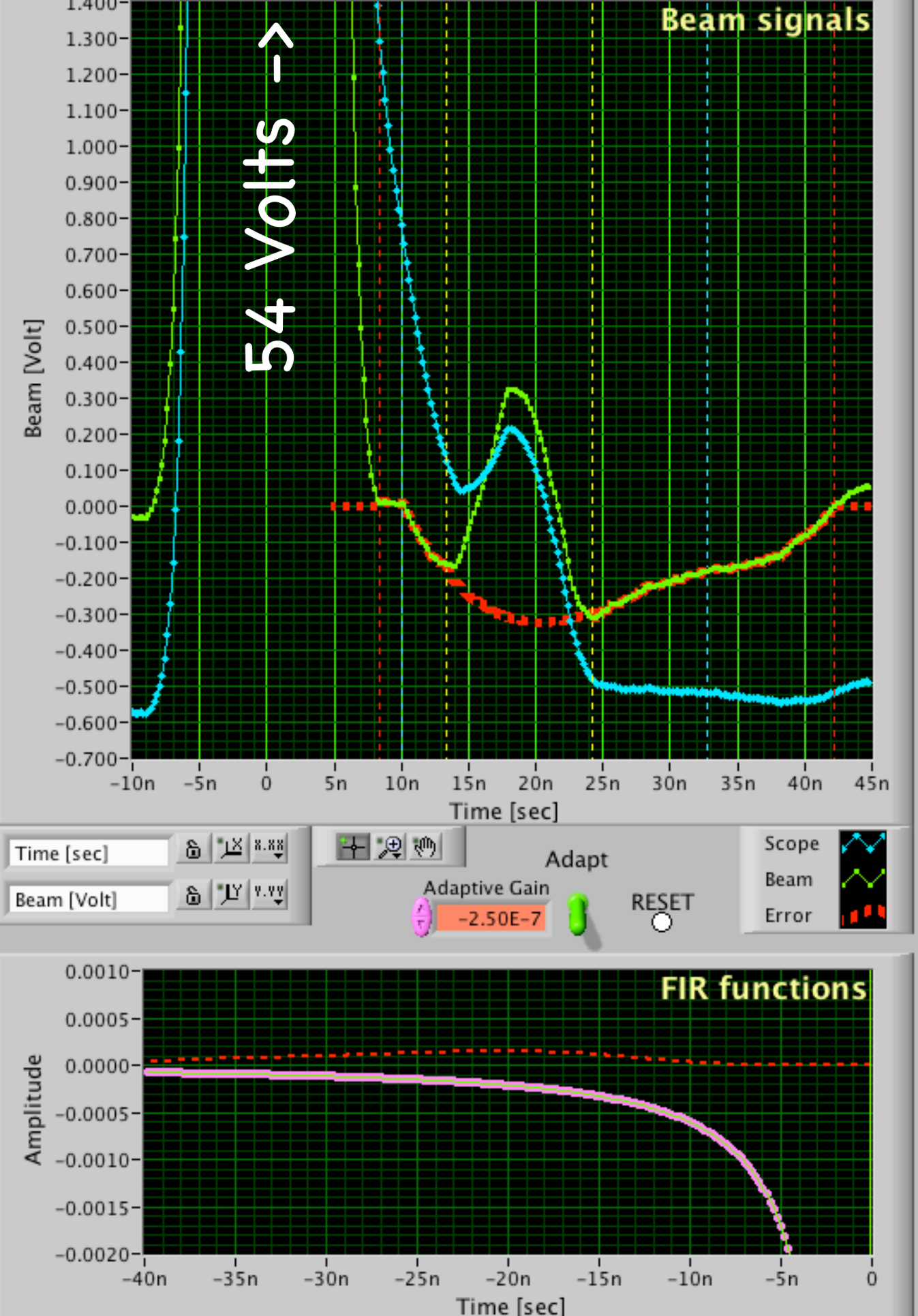

Acqusition Times [sec]
0
0.000000
41.917318u
-12.500157u
-12.500075u
Trigger
First Point
RF freq [Hz]
53104423
Static Offsets [sec]
Prot
987.5000n
Pbar
2.073000u
Pbar Offset [sec]
-1.289535u
Trigger Offsets
Turn Marker Offset [sec]
200.0n
0.0
-200.0n
-400.0n
-600.0n
-800.0n
-1.0u
-1.4u
0
5
10
15
20
25
31
Double Turn Trigger #
Bucket Base [sec]
Offsets
Prot
987.5000n
Pbar
783.4651n
Turn
20.958706u
Bucket
18.831n
Fit
Data
Clock Works.vi
k Works.vi rev. 33


Acqusition Times [sec]
0
0.000000
41.917325u
-12.500116u
-12.500041u
Trigger
First Point
RF freq [Hz]
53104429
Static Offsets [sec]
Prot
987.5000n
Pbar
2.073000u
Pbar Offset [sec]
-1.289472u
Trigger Offsets
Turn Marker Offset [sec]
200p
150p
100p
50p
0
-50p
-100p
-150p
-200p
0
5
10
15
Double Turn Trigger #
Bucket Base [sec]
Offsets
Prot
987.5000n
Pbar
783.5282n
Turn
20.958704u
Bucket
18.831n
Fit
Data


Acqusition Times [sec]
0
41.917456u
-12.500109u
Trigger
First Point
RF freq [Hz]
53104428
Static Offsets [sec]
Prot
987.5000n
Pbar
2.073000u
Pbar Offset [sec]
-1.289464u
Trigger Offsets
Turn Marker Offset [sec]
-1.289350u
-1.289400u
-1.289450u
-1.289500u
-1.289550u
-1.289600u
16
20
25
31
Double Turn Trigger #
Bucket Base [sec]
Offsets
Prot
987.5000n
Pbar
783.5359n
Turn
20.958704u
Bucket
18.831n
Fit
Data

Centroids

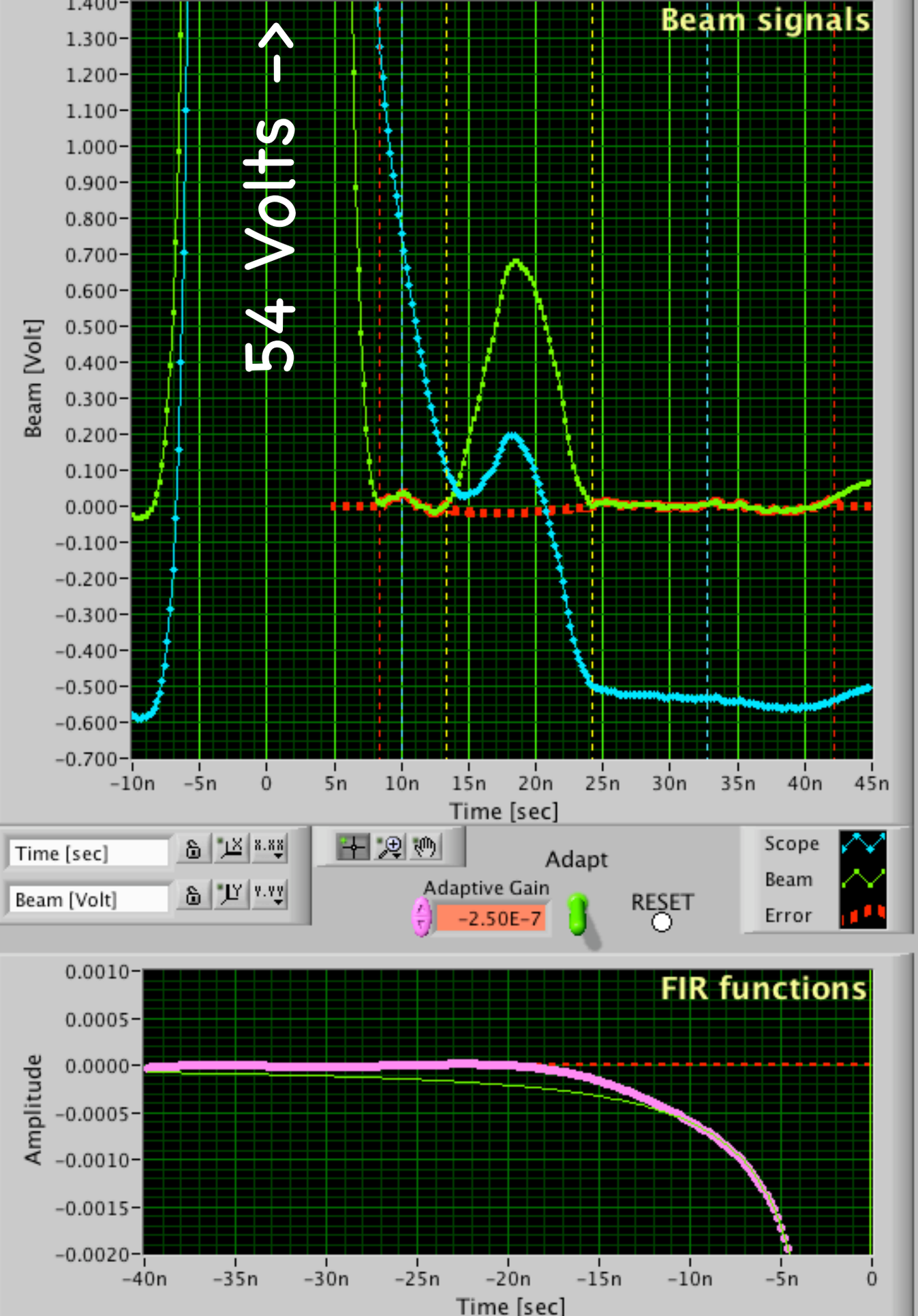

0.10
0.080
0.060
0.040
0.020
0.0
-0.020
-0.040
-0.060
-0.080
-0.10
-0.12
-0.14
-0.16
-0.18
-0.20
Centroids [nSec]
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
Bunch



Dispersion
<-- Corrected Signal

<-- Raw Scope Signal

<-- Anti-Dispersive FIR

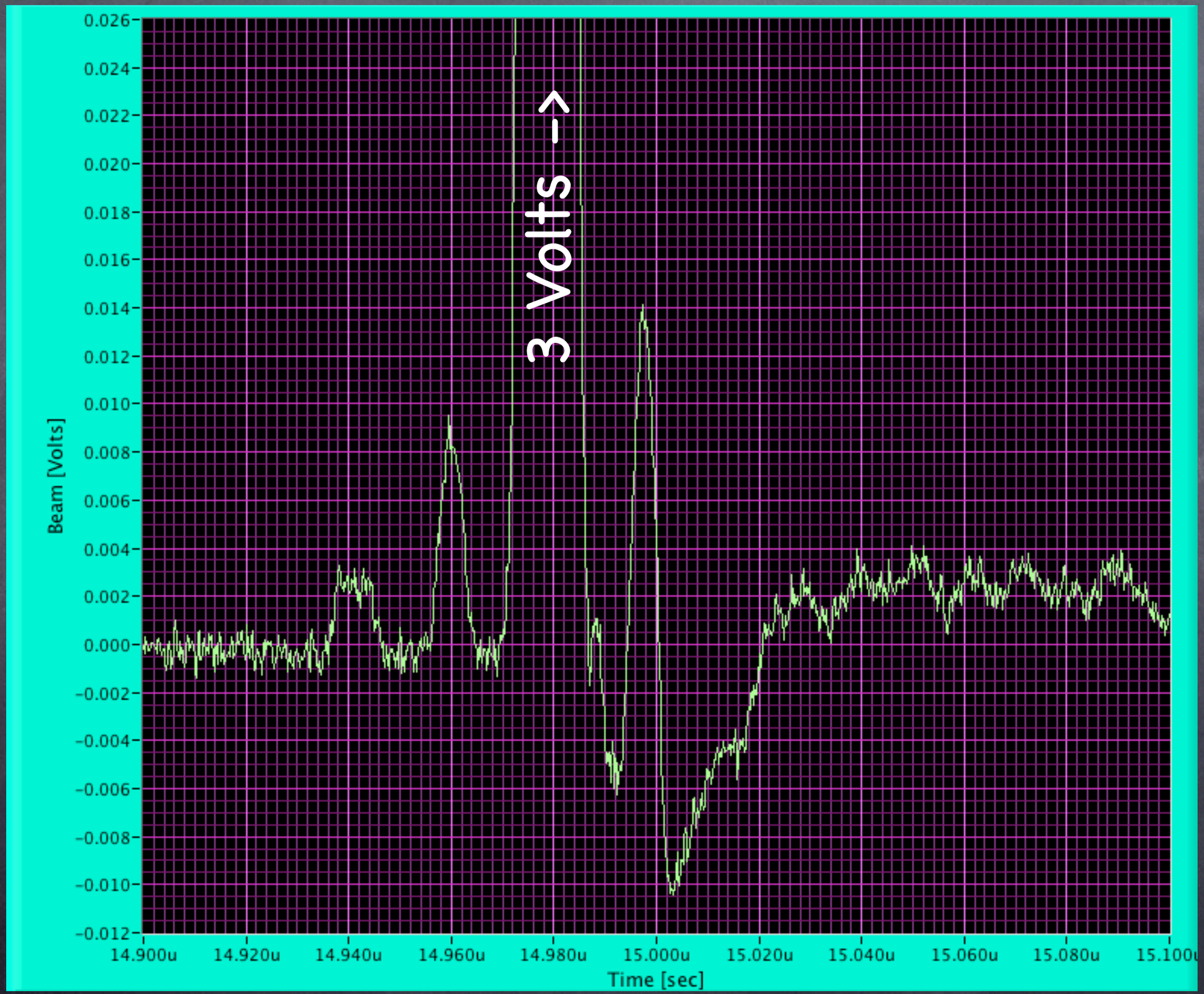


Dispersion + Adaptive
<-- Corrected Signal

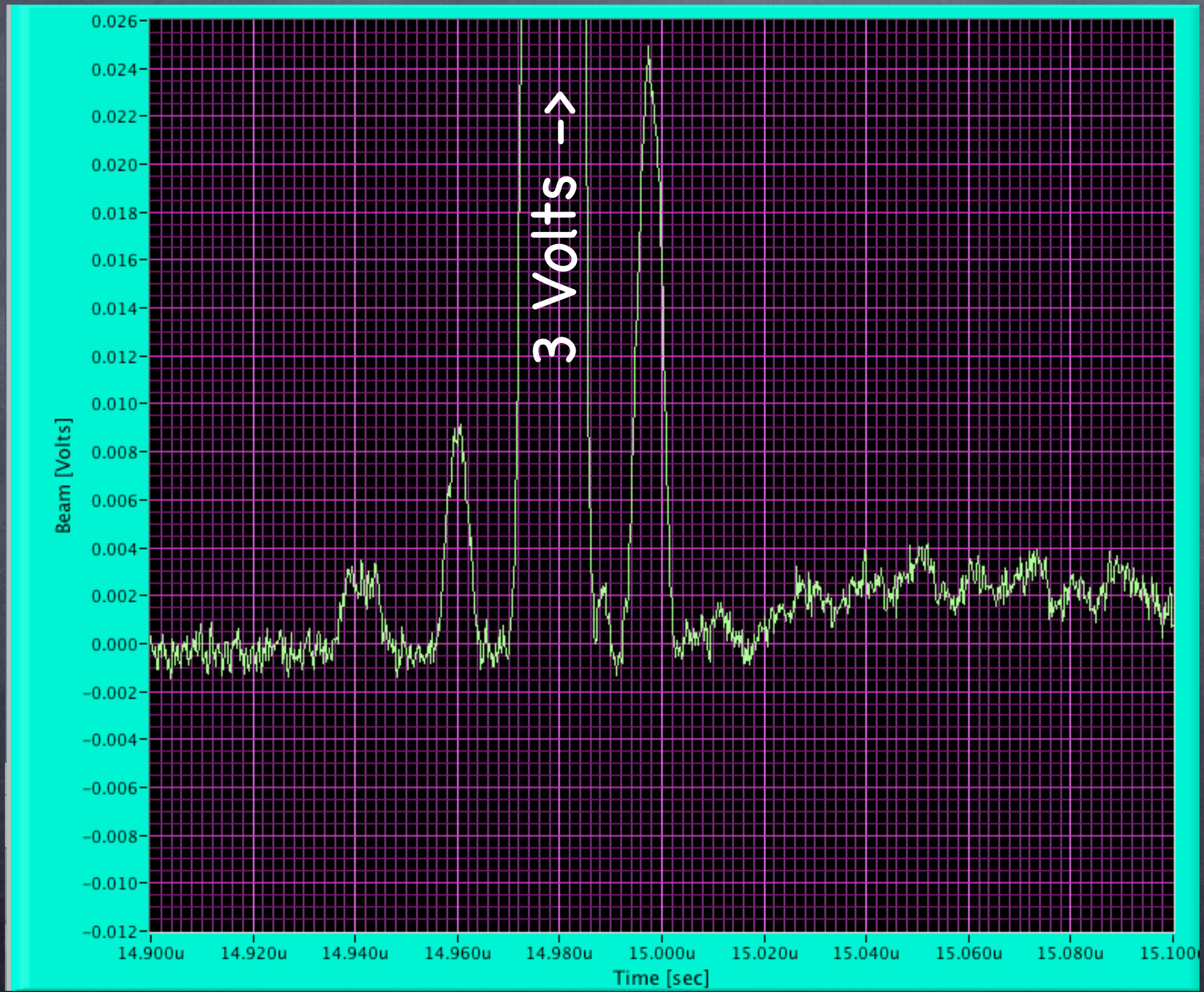
<-- Raw Scope Signal

<-- Adaptive FIR

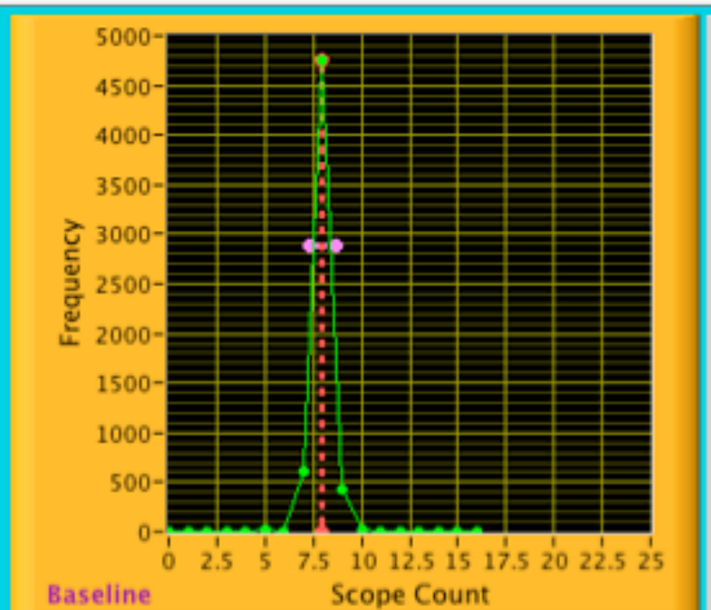
Predicted Correction for Dispersion



With Adaptive FIR Correction



Running Local HistoBase.vi rev. 74



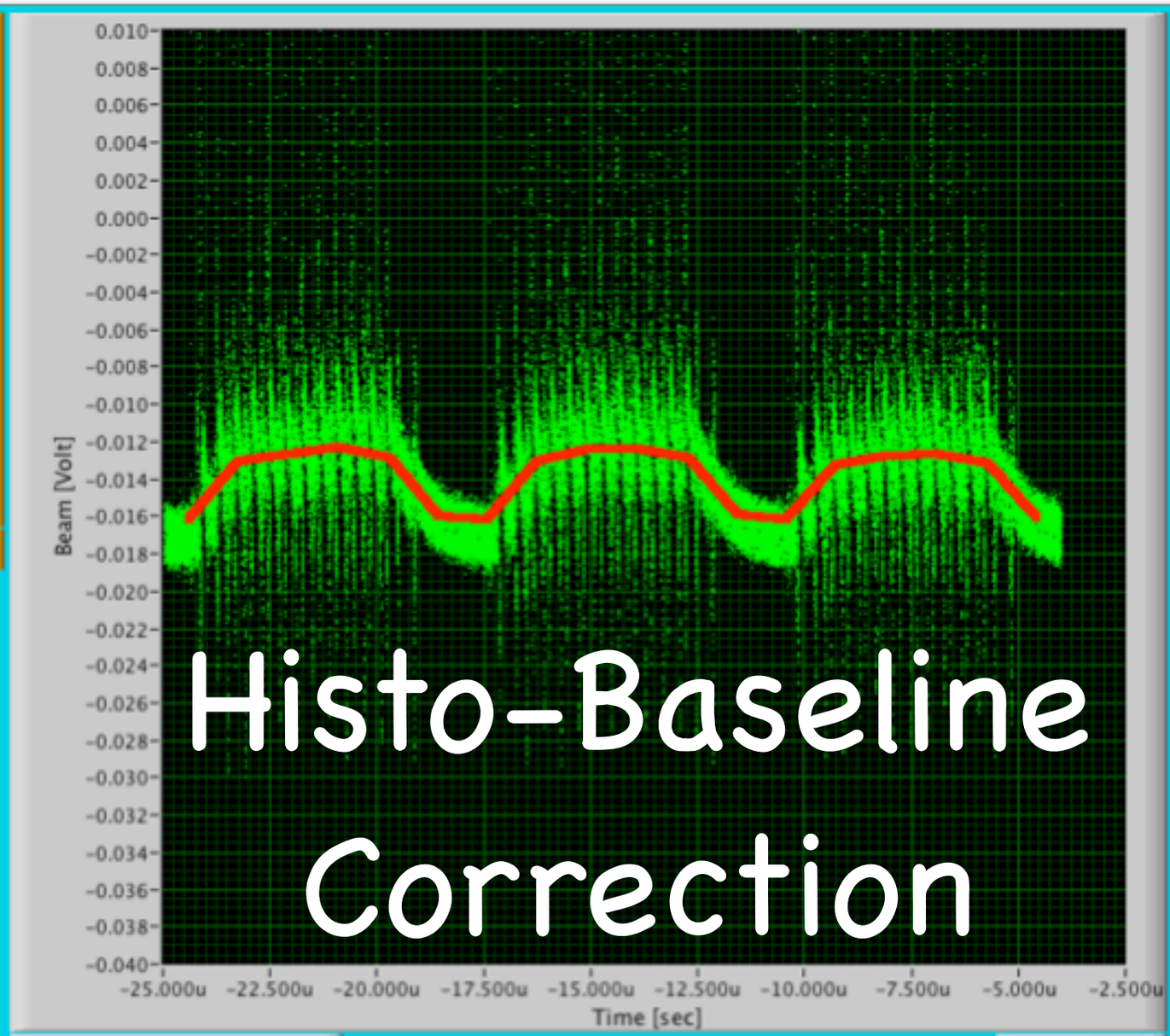
base line
-0.016

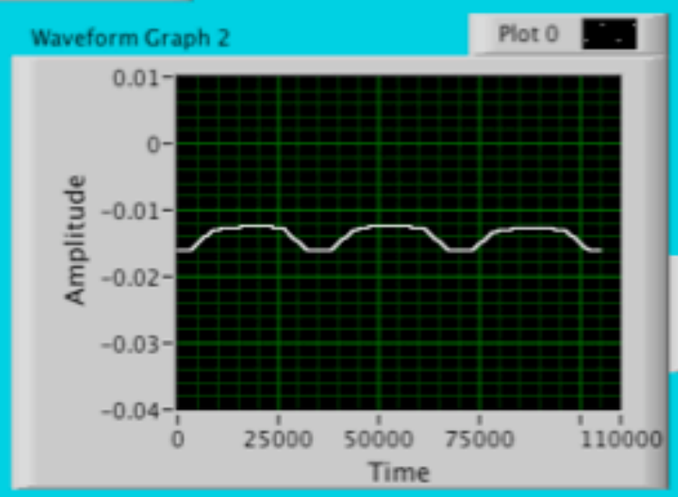
INput
t0 -25.000000u
∂t 200.000003p
0
-0.015
Beam [Volts]

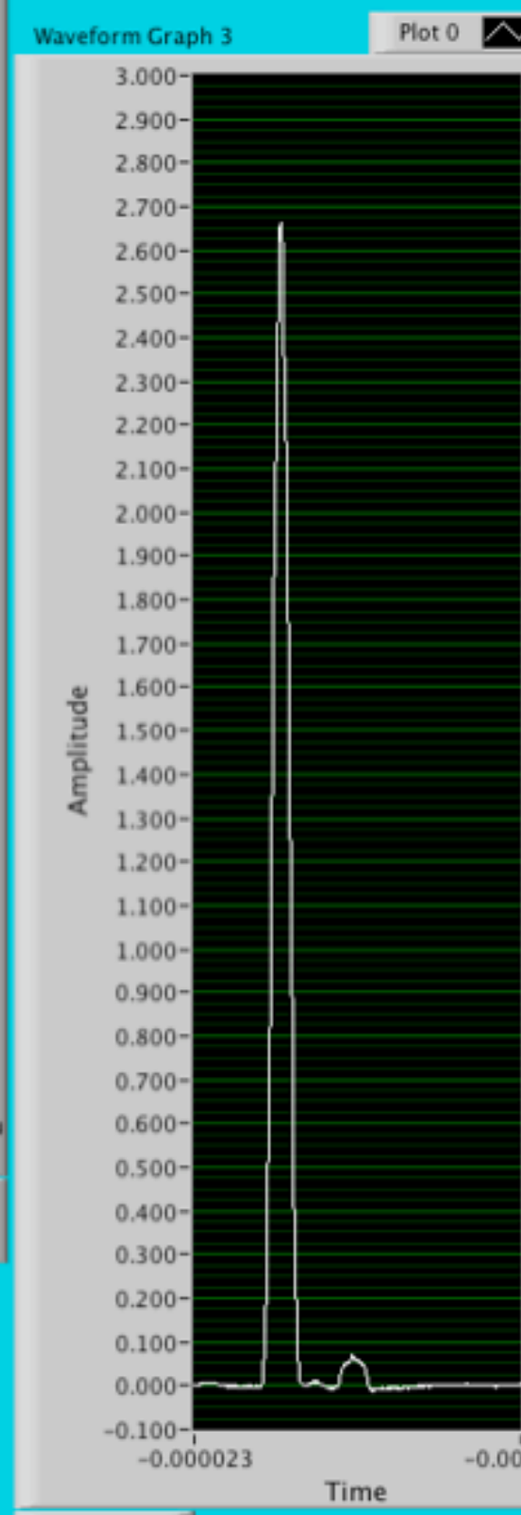
Baseline Points
18

Histogram [Volts]
10.0m max
3.0m size
-40.0m min

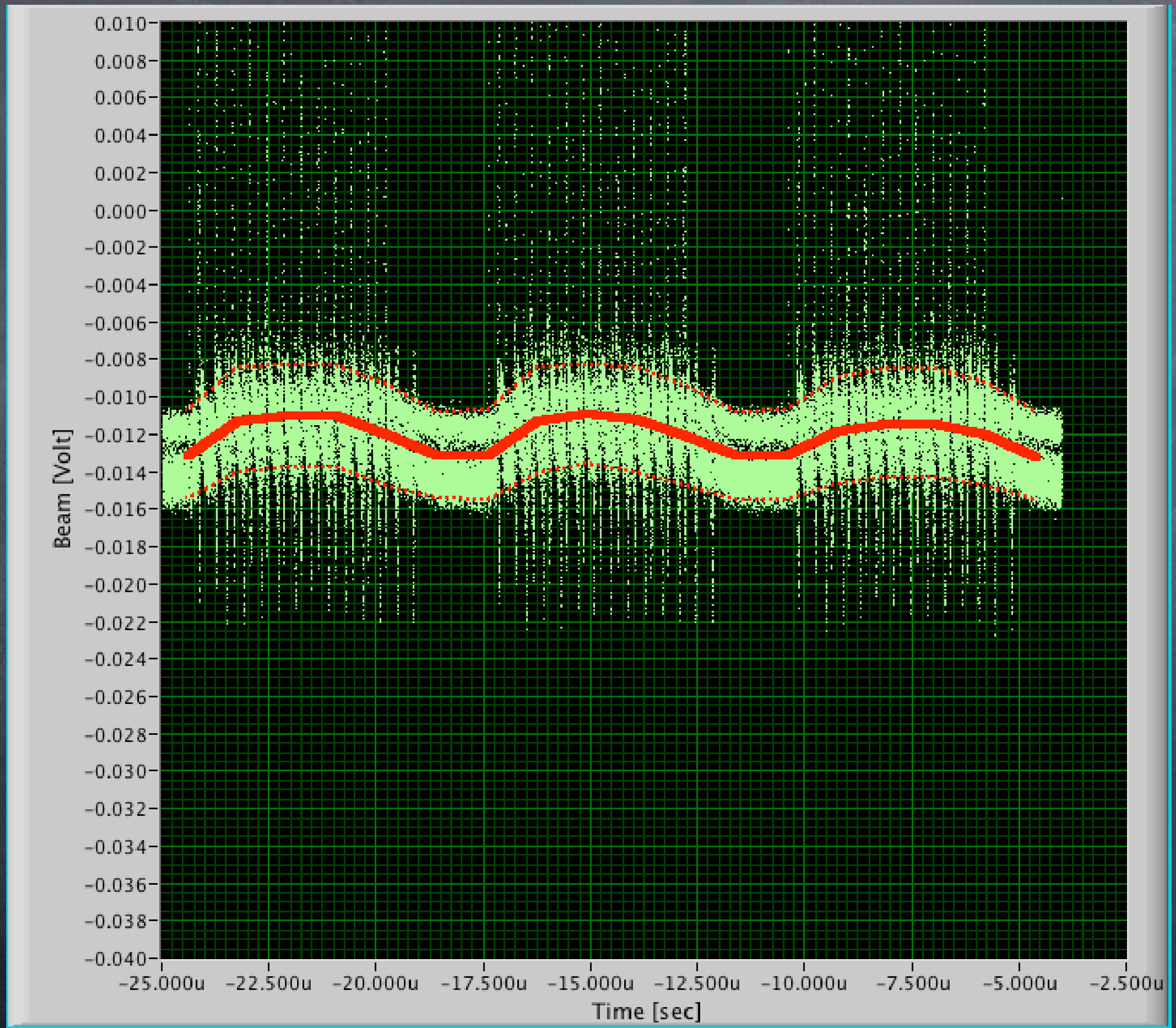
Histo-Baseline Correction



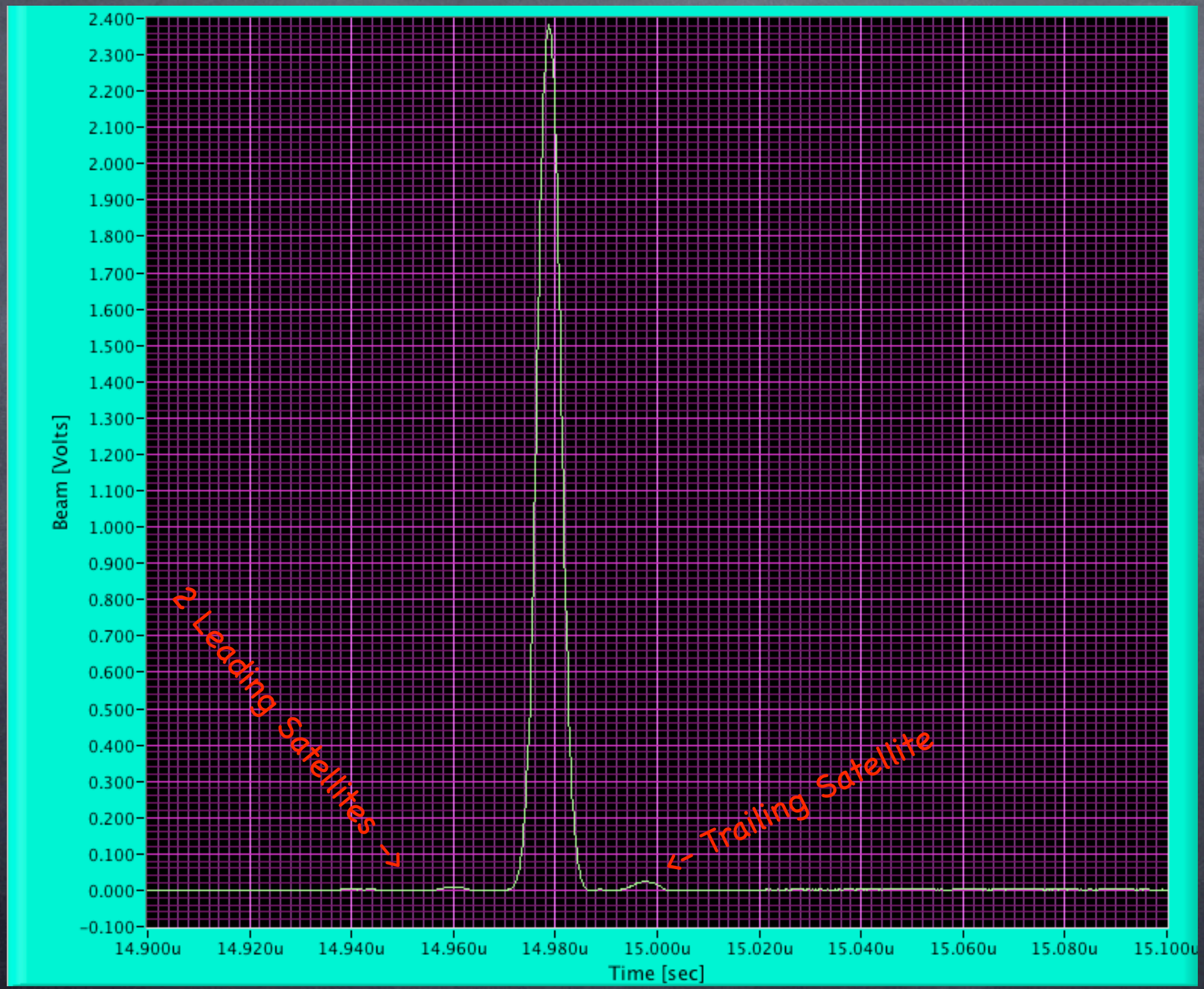




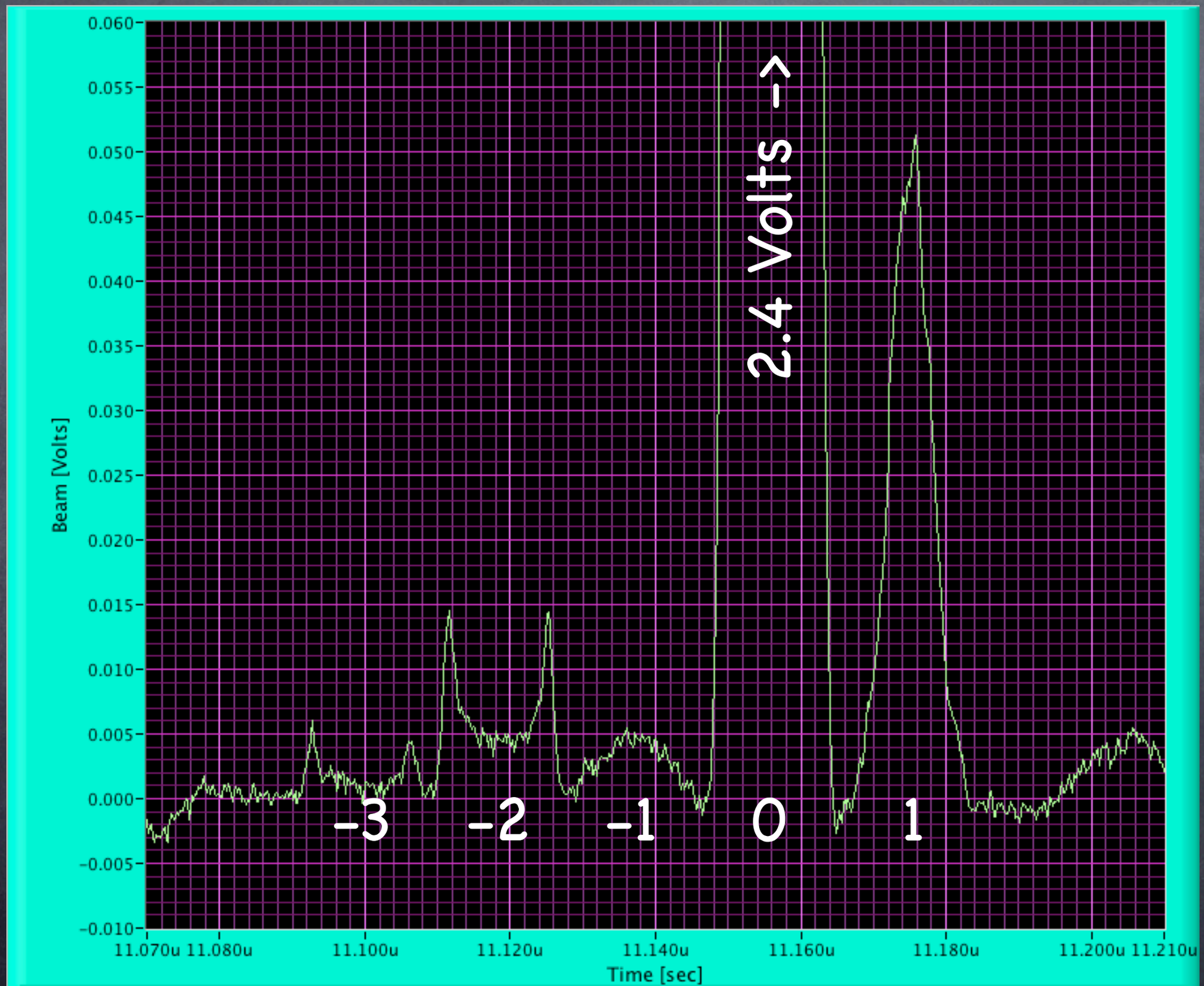
Histo-Baseline Correction



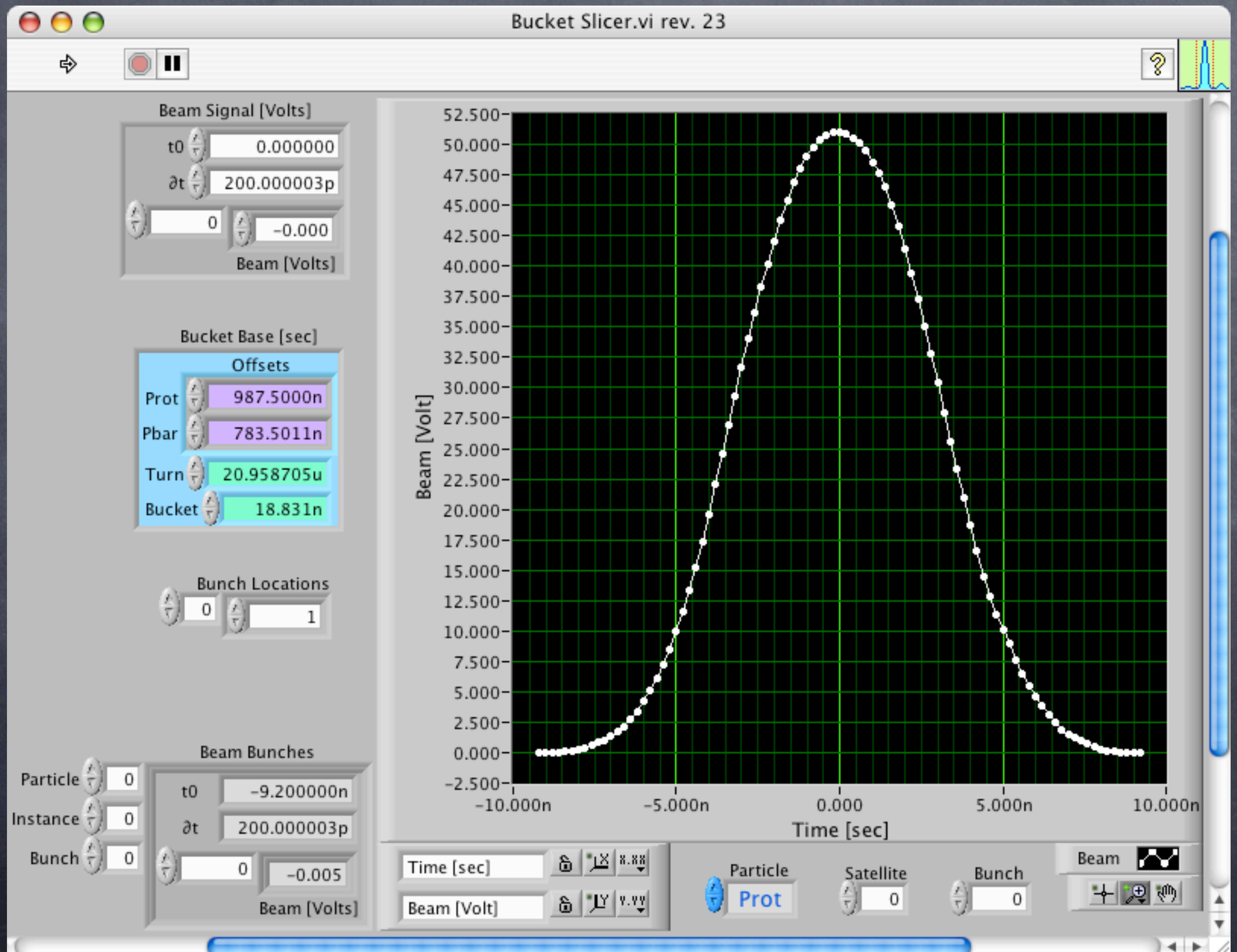
Proton Bunch



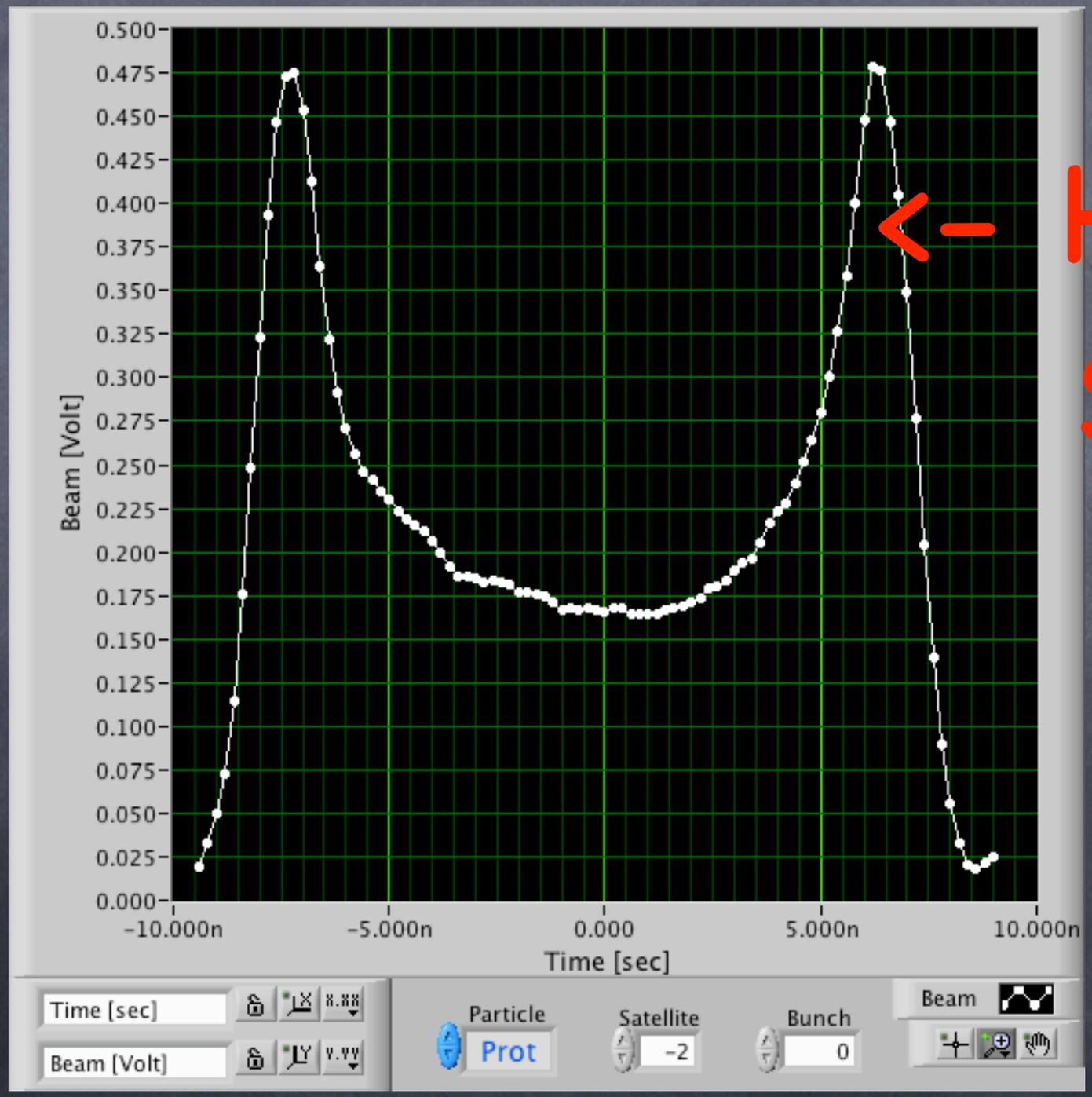
Proton Satellites



Proton Aggregate

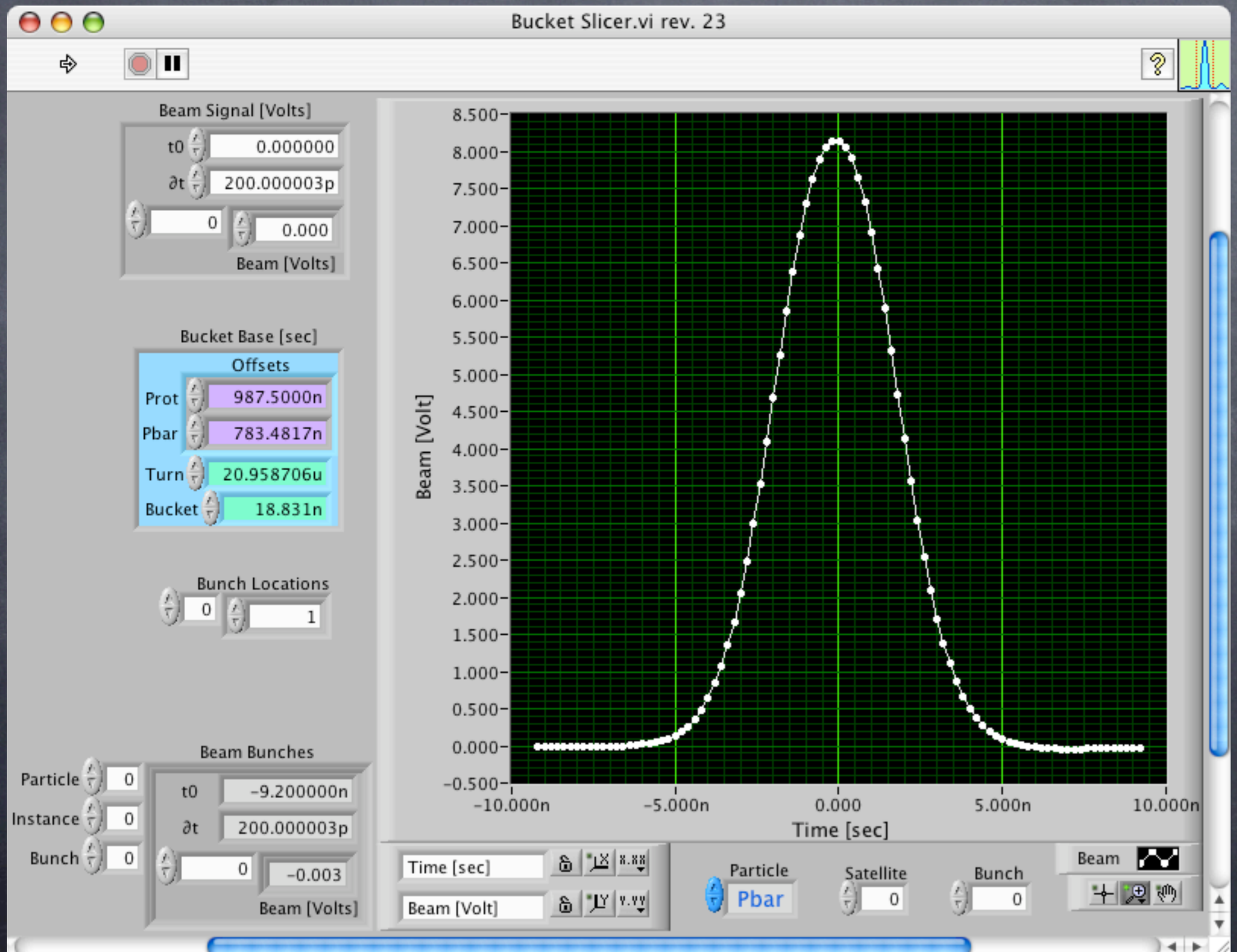


Proton Satellite -2 Aggregate

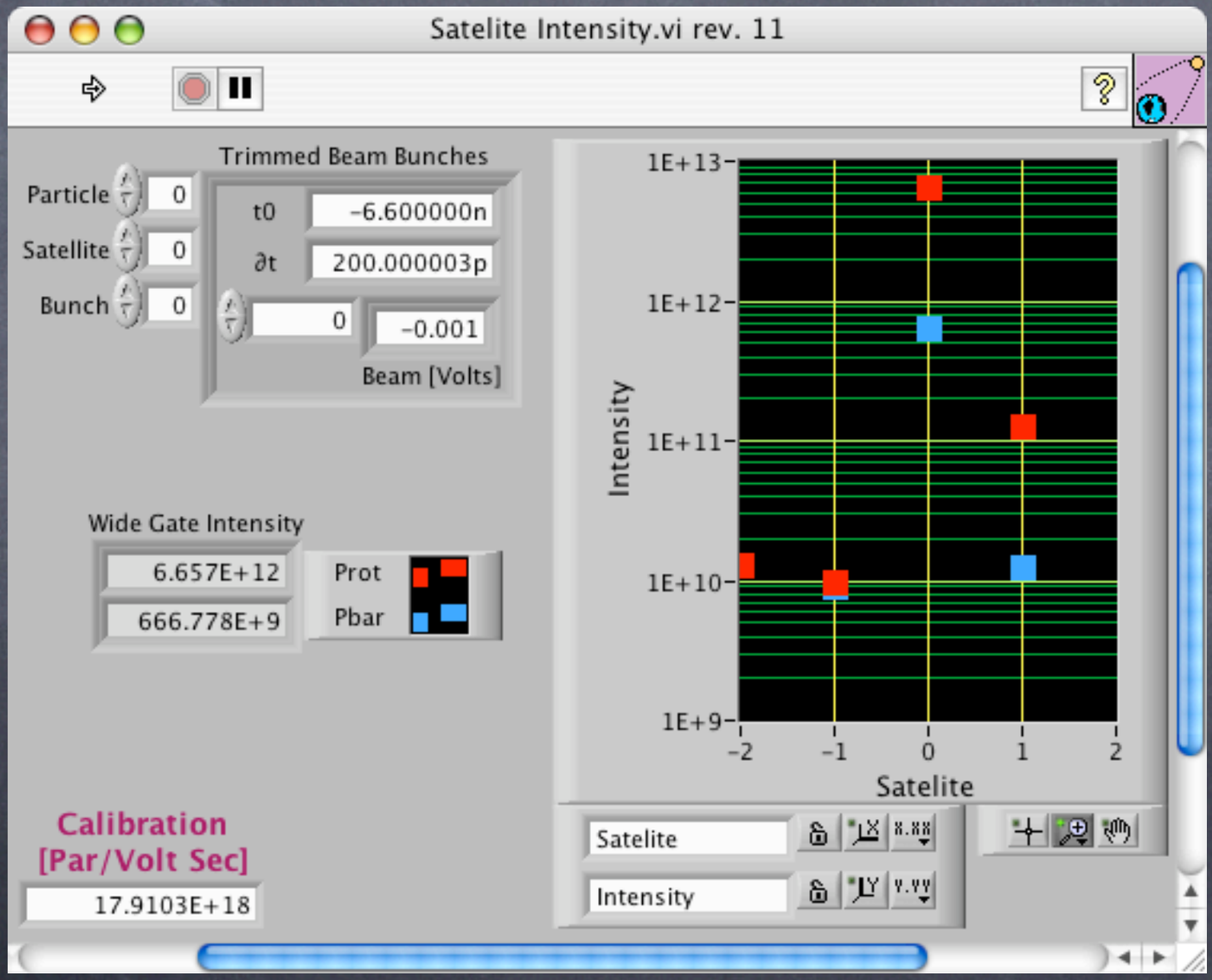


<- Hollow Shell

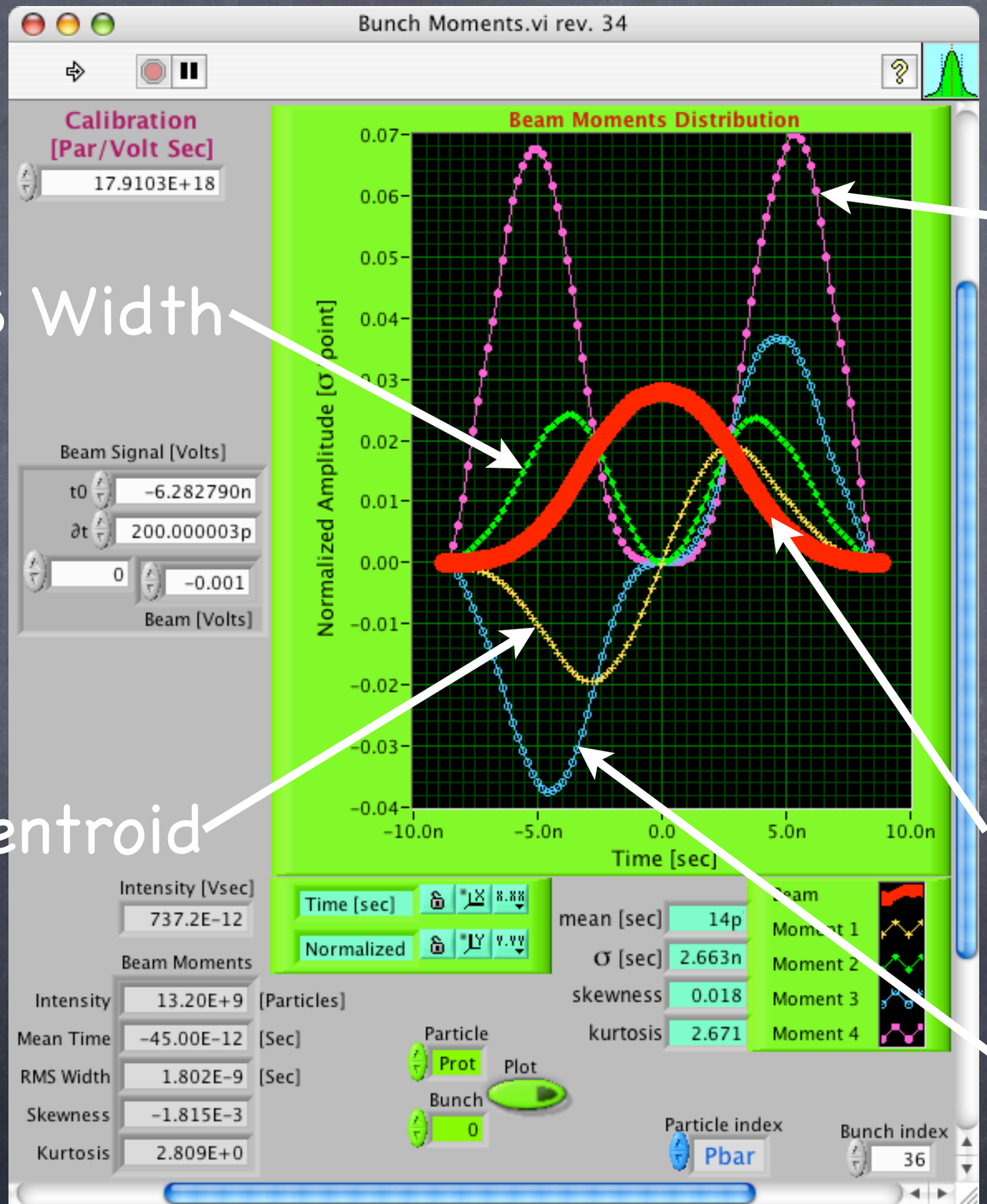
Pbar Aggregate



Satellite Intensities



Moments



RMS Width

Centroid

Kurtosis

Beam

Skewness

<- Intensity ->

OLD

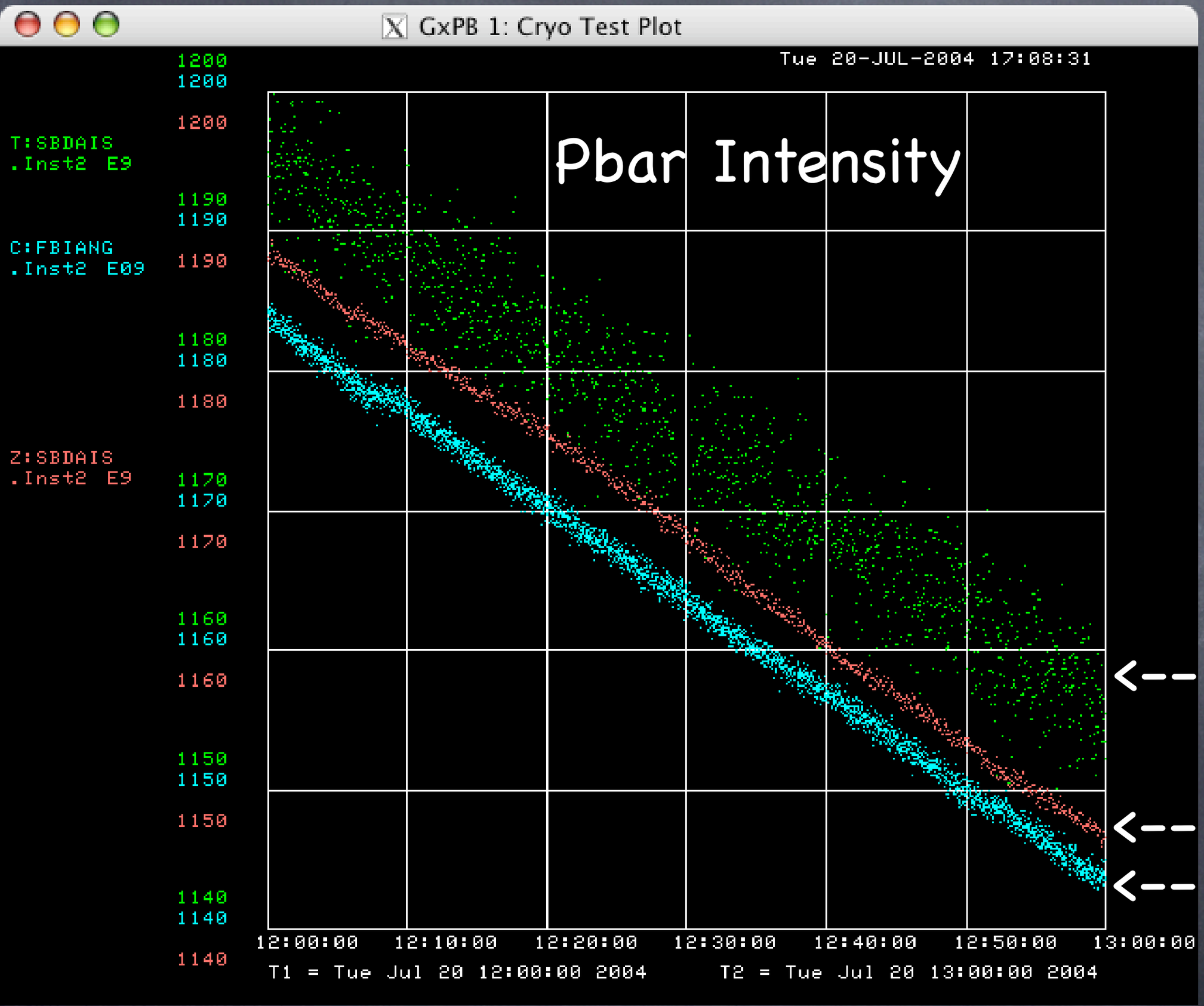
NEW

<- Width ->

Proton

Pbar

SBD-OLD / NEW / FBI



<-- OLD SBD

<-- NEW SBD

<-- NEW FBI

Near Future Plans

- Cogging Alarm Signals
  - Exact Temporal P - Pbar Bunch Displacement (±5 pS)
  - Exact Temporal P - Pbar AA Marker Displacement (±25 pS)
  - Narrow Gate / Wide Gate (±2 buckets) Ratio (±.3%)
- Full Signal Processing in Off Line Data Viewer
  - All Signal Stages Available
- Gaussian Fit?
- Emittance Fit
- Comfort Display
  - Client Based?
  - Web Based?
- Event Driven Data Acquisition & Archiving?