



SPEAR3 DCCT Data Acquisition

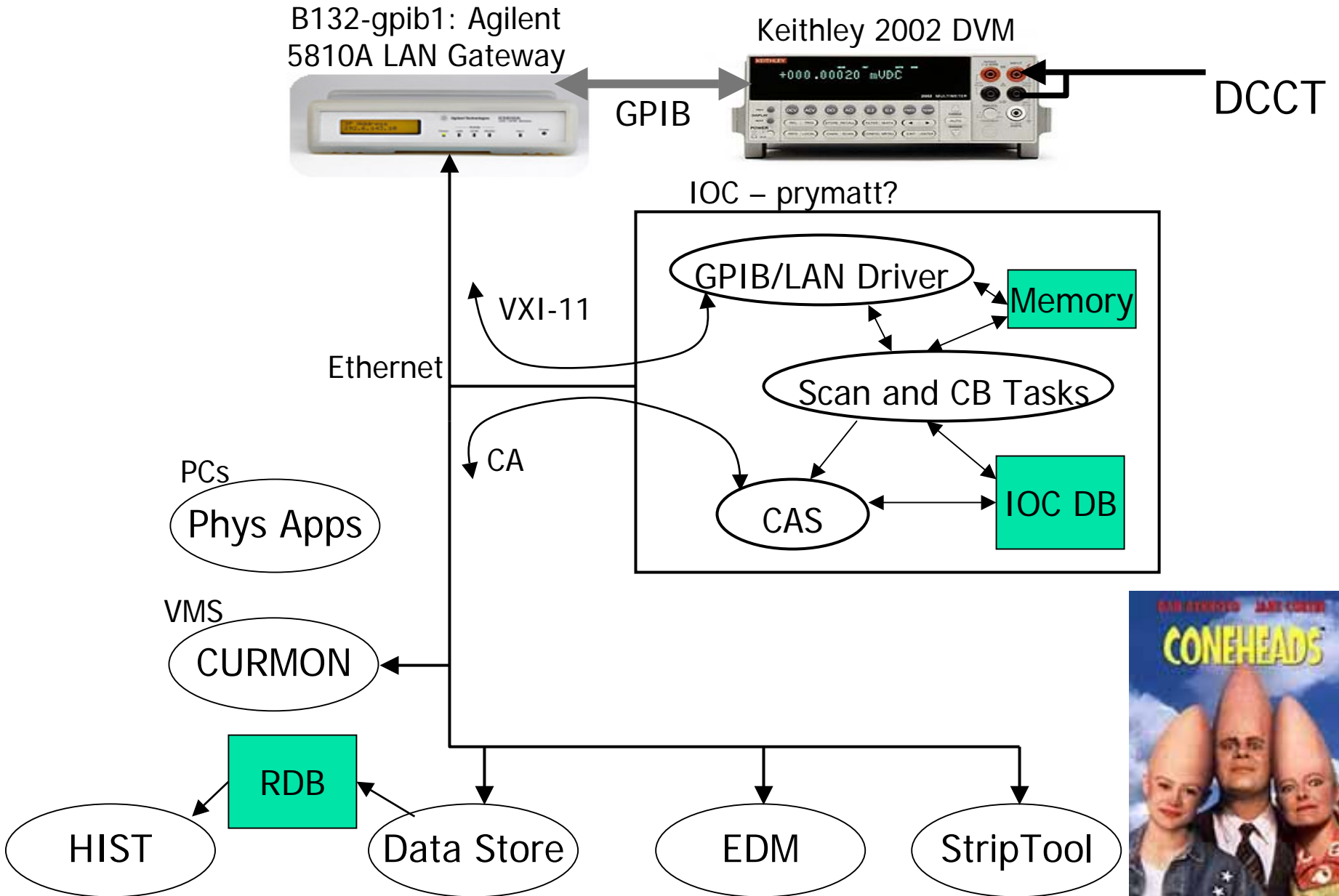
- Requirements
- System Diagram
- EDM Displays
- CURMON, History (Clemens)
 - To-Do List



Requirements

- Interface to Keithley 2002 DVM
- Acquire trace data at 1Hz or more, 50 or more points/sec
- Find best fit and calc average I, lifetime, etc over Fast, Medium, and Slow time periods (enterable)
- Provide PVs for CURMON
- Calc integrated I over various time periods and per beamline
- EDM EPICS displays and History Interface

System Diagram



Running beamCurr and StripTool

SPEAR index

Beams

79.798 mA
265.151 hour
21.159 A*hour
<edm:energy>

EXIT
EXIT EDM

HistoryPlot | **Displays** | TV Displays

StripTool

MATLAB | Please wait...

CMLOG

AlarmHandler

BL1

BL2

BL7 <edm:BL7_gse wait...>

BL8

BL9 <edm:BL9_gse wait...>

BL10 <edm:BL10_gse wait...>

B116 VME

Ring parameters

Operator messages

Clear

B117

Feedback

MPS VME VME

Configs

B118

Vacuum VME

Power supplies

Kickers

B507 AC

B132 RF VXI

VME

Injector

BL6 <edm:BL6_gse wait...> Please wait...

BL5 <edm:BL5_gse wait...> Please wait...

BL4 <edm:BL4_gse wait...> Please wait...

BL3

BL11 <edm:BL11_gse wait...>

EDM Display - beamCurr

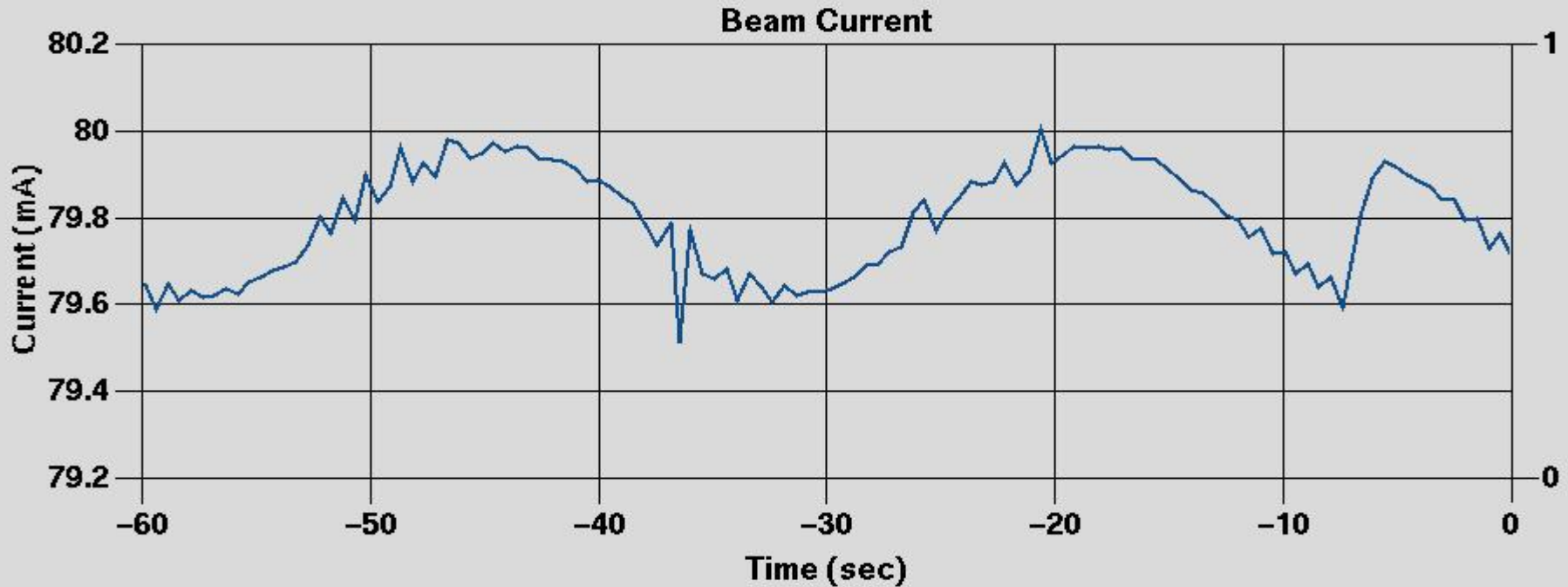
SPEAR Beam Current

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EXIT

Beams

10-Sep-2003 15:43:16



Curmon Lifetime
Display Mode

FAST

MEDIUM

SLOW

Fast

.5 second

Medium

30

Slow

180

Fit Period (sec)

Average (mA)

Lifetime (h)

Loss Rate (mA/min)

Vac Quality (A*hour)

79.709

-0.007

166.329

-0.000

Diags

79.824

-28.307

0.047

-2.260

Diags

79.792

275.446

-0.005

21.979

Diags

EDM Display - beamCurrDiagsFast

SPEAR Beam Current Fast Calculation Diagnostics

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Data Update Rate

Num Power Line Cycles*

Average 79.953 mA

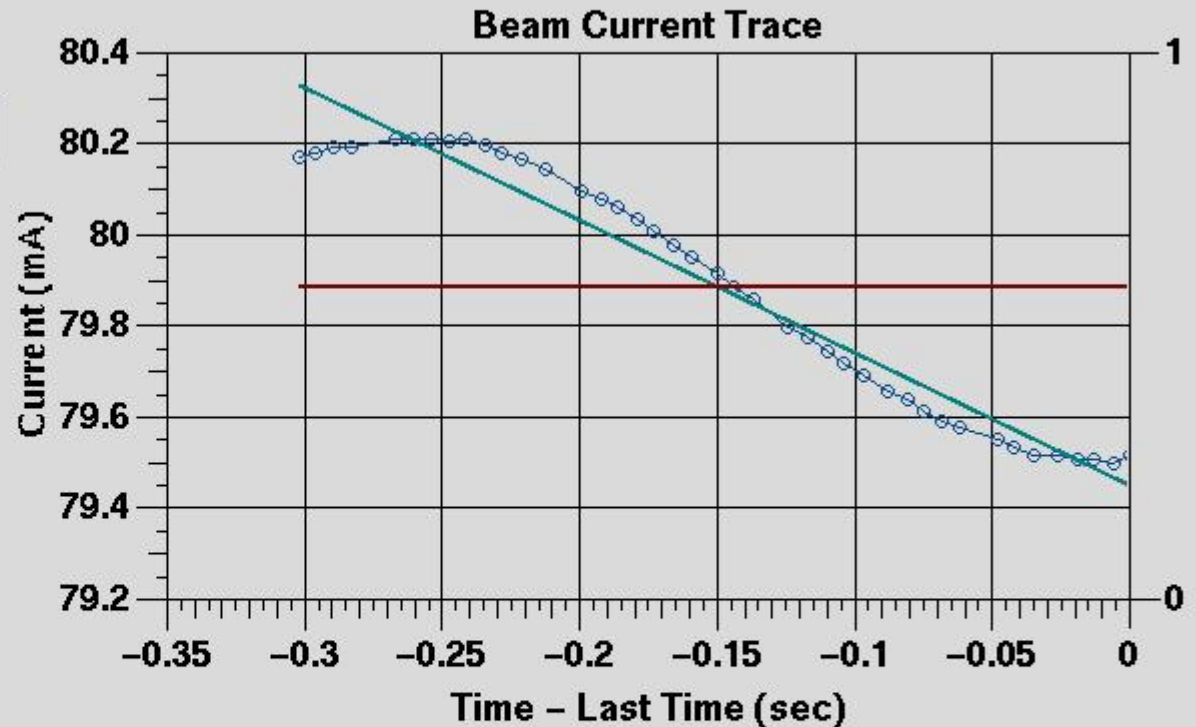
Lifetime -0.007 hour

Loss Rate 179.111 mA/min

Vacuum Quality -0.001 A*hour

* NPLC = Integration Period *
Power Line Frequency

Send String to DVM:



Display Update

Status OK

Average 79.88560

Slope 2.90144

Offset 79.45108

Std Deviation 0.27099

Num Points 41

Min Points for Fit

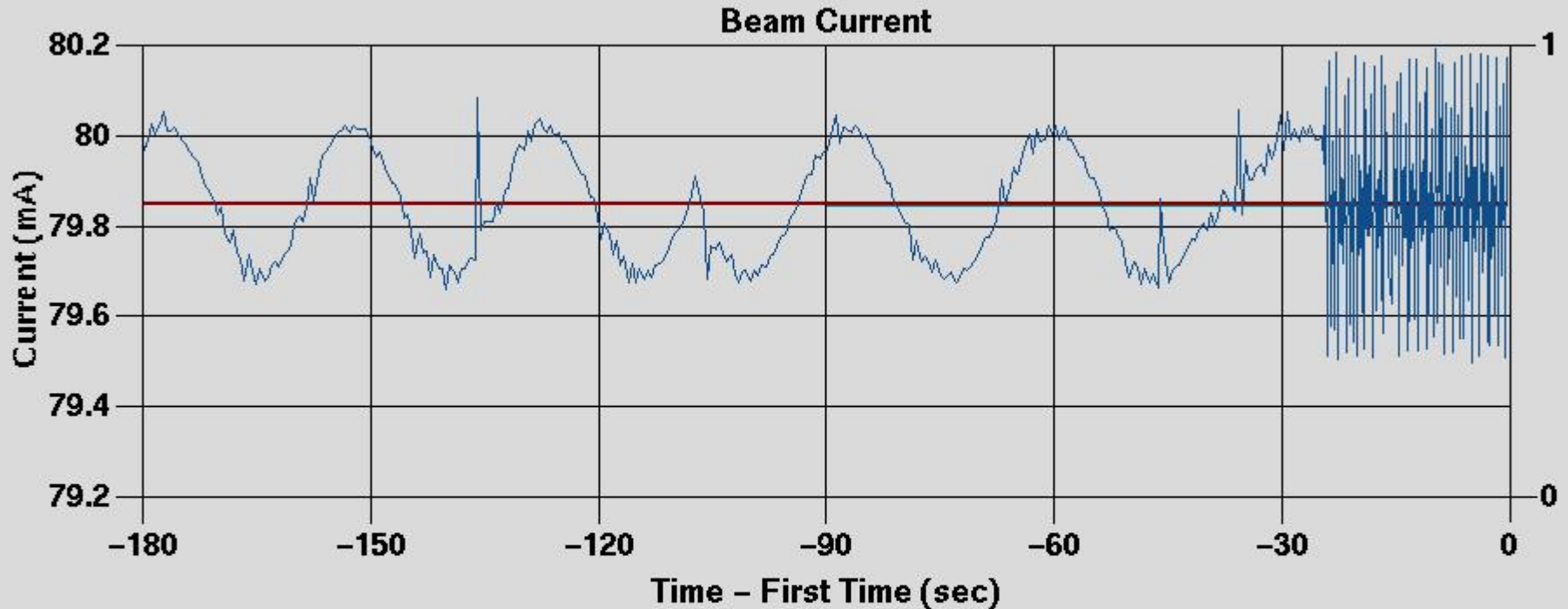
First Time 50.23

Midpoint Time 50.38

Last Time 50.53

EDM Display - beamCurrDiagsSlow

SPEAR Beam Current Slow Diagnostics

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Fit Period (sec) **180**

Average 79.850 mA

Lifetime -638.811 hour

Loss Rate 0.002 mA/min

Vacuum Quality -51.009 A*hour

Status OK

Average 79.84913

Slope 0.00003

Offset 79.84644

Std Deviation 0.16249

Num Points 421

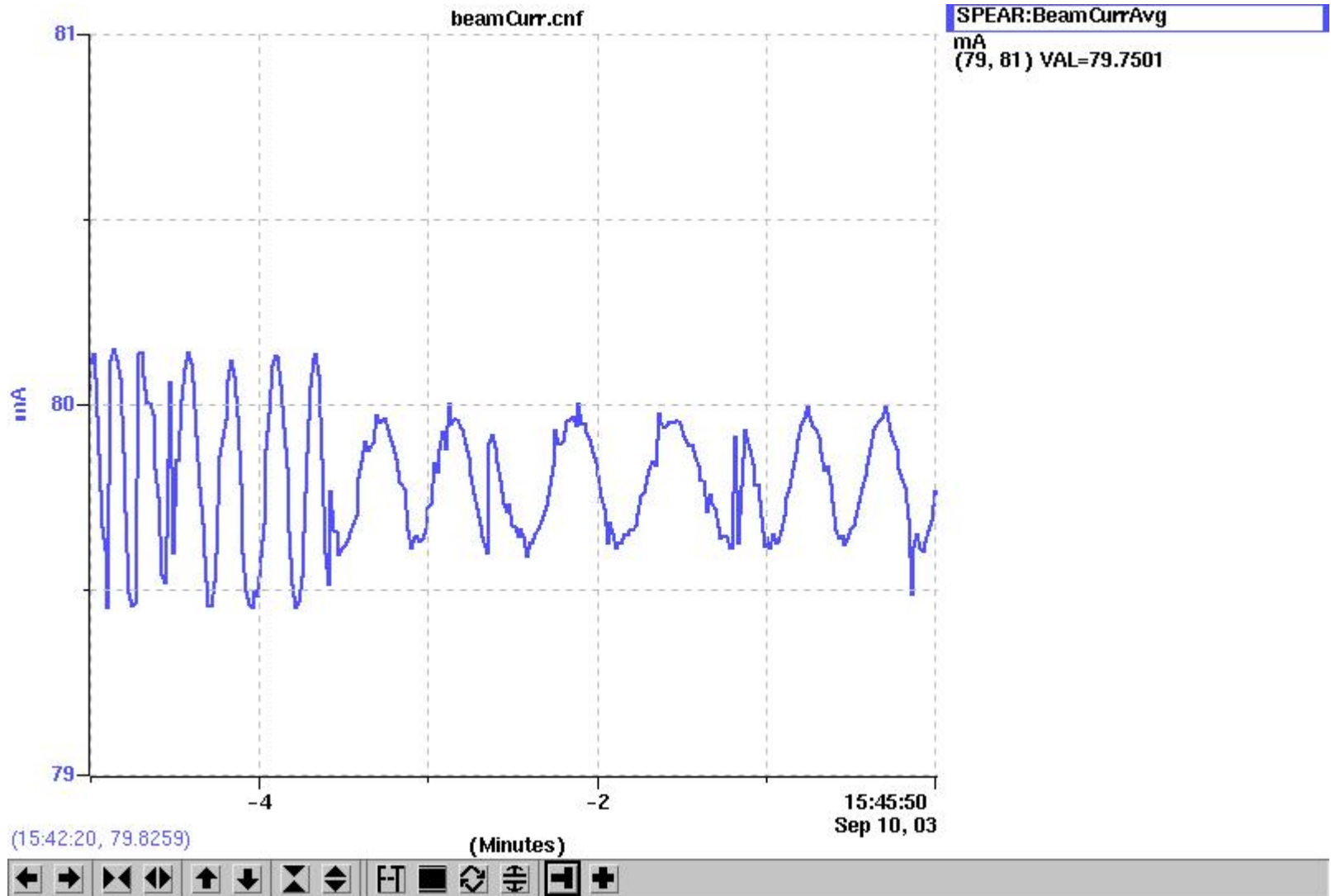
Min Points for Fit **10**

First Time 42.22

Midpoint Time 132.15

Last Time 222.08


StripTool Display



StripTool Controls

File Window Help

Plot New Signal:

Name	Color	Plot	Log10	Precision	Min	Max	Modify	Remove
SPEAR:BeamCurrAvg		<input type="checkbox"/>	<input type="checkbox"/>	3	79.000	81.000	<input type="button" value="Modify"/>	<input type="button" value="Remove"/>

File Window Help

Plot New Signal:

Time Controls

Time Span: 0 : 5 : 0

Ring Buffer Size: 3600 samples

Data Sample Interval: 1 seconds

Graph Redraw Interval: 1 seconds

Graph Options

Graph Foreground

Graph Background

Grid Color

x-grid lines:

y-grid lines:

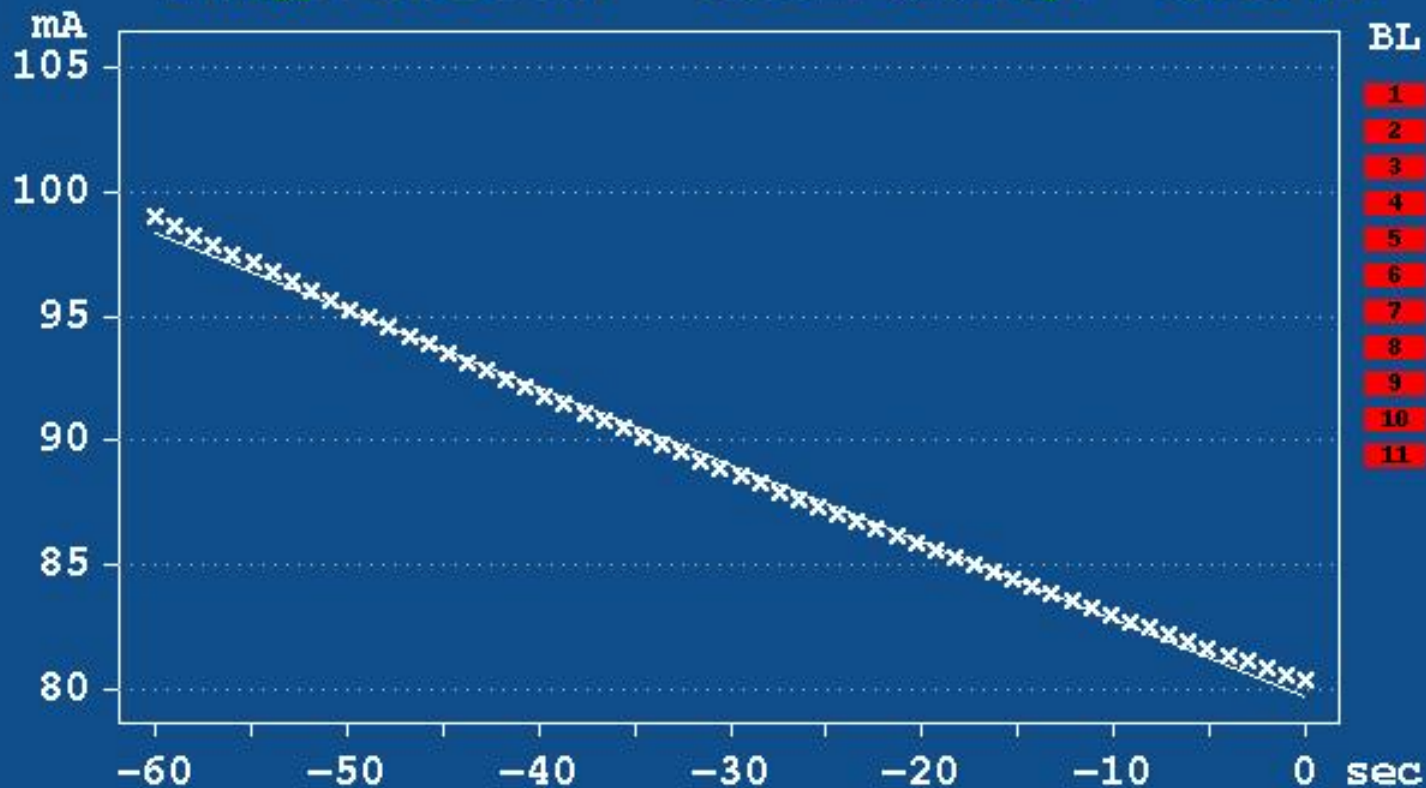
y-axis label color: selected curve

data line-width:

CURMON

SPEAR CURRENT MONITOR

Energy: 0.000 GeV Vacuum Quality: -0.006 Ah



Current: 80.354 mA

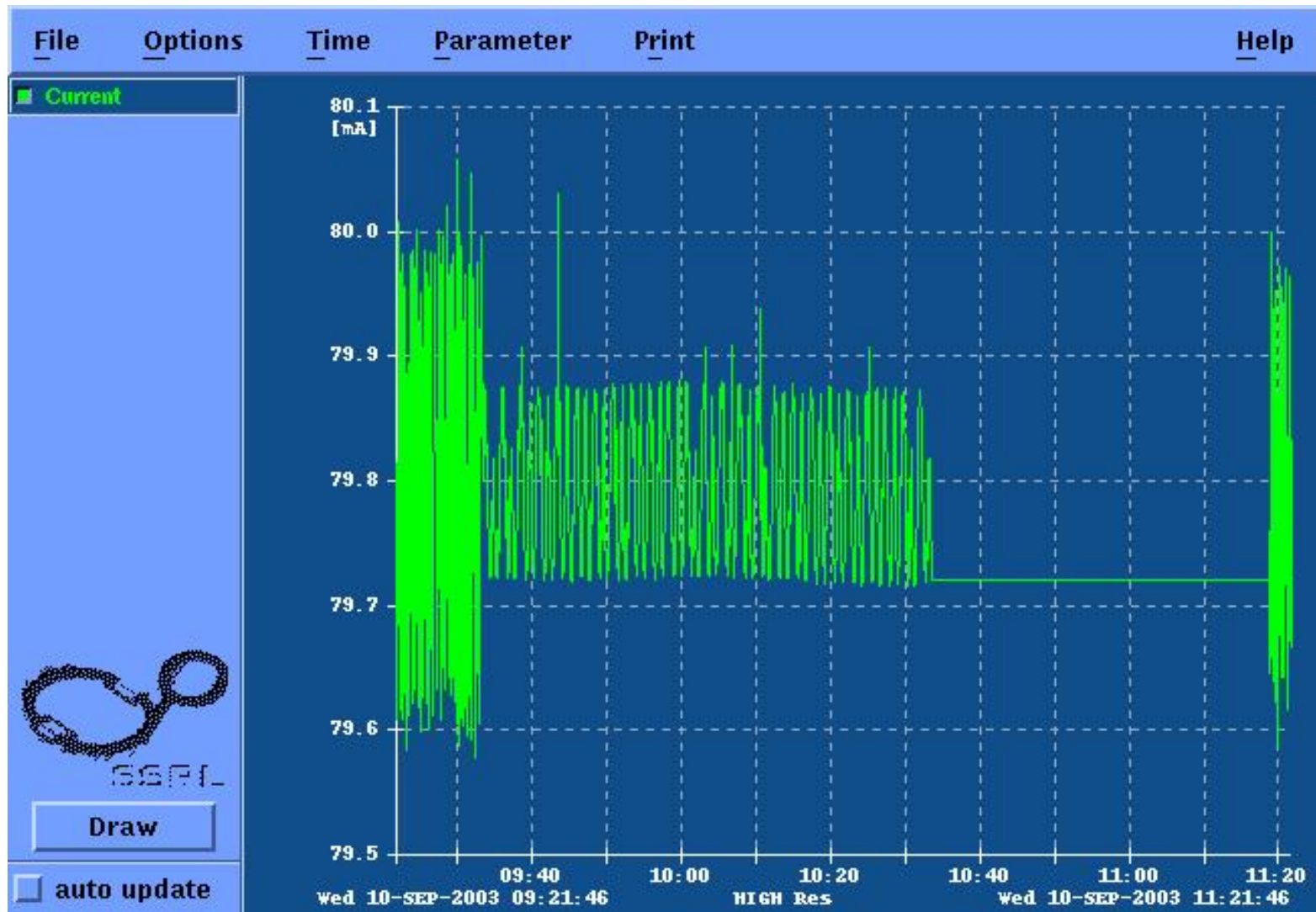
Lifetime: -0.078 h

Loss Rate: -18.939 mA/min

10-SEP-2003 15:56:31

SPEAR Status: **DOWN**

History Browser (HIST)





To-Do List

- Integrated I calcs
- Filtering?
- Which IOC?
- Test with real DCCT -> minor changes
- Changes requested by OPS
- Finish CURMON
- Documentation
- Unix EDM backspace key problem
- EDM XY plot peculiarities