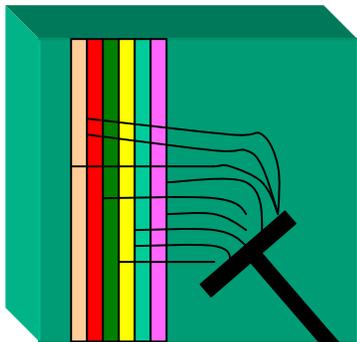
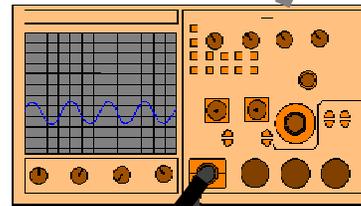


# SVT TIMING STUDIES: HARDWARE SETUP

BOSVT00, wedge 0



Logic Analyzer:  
HP1660C

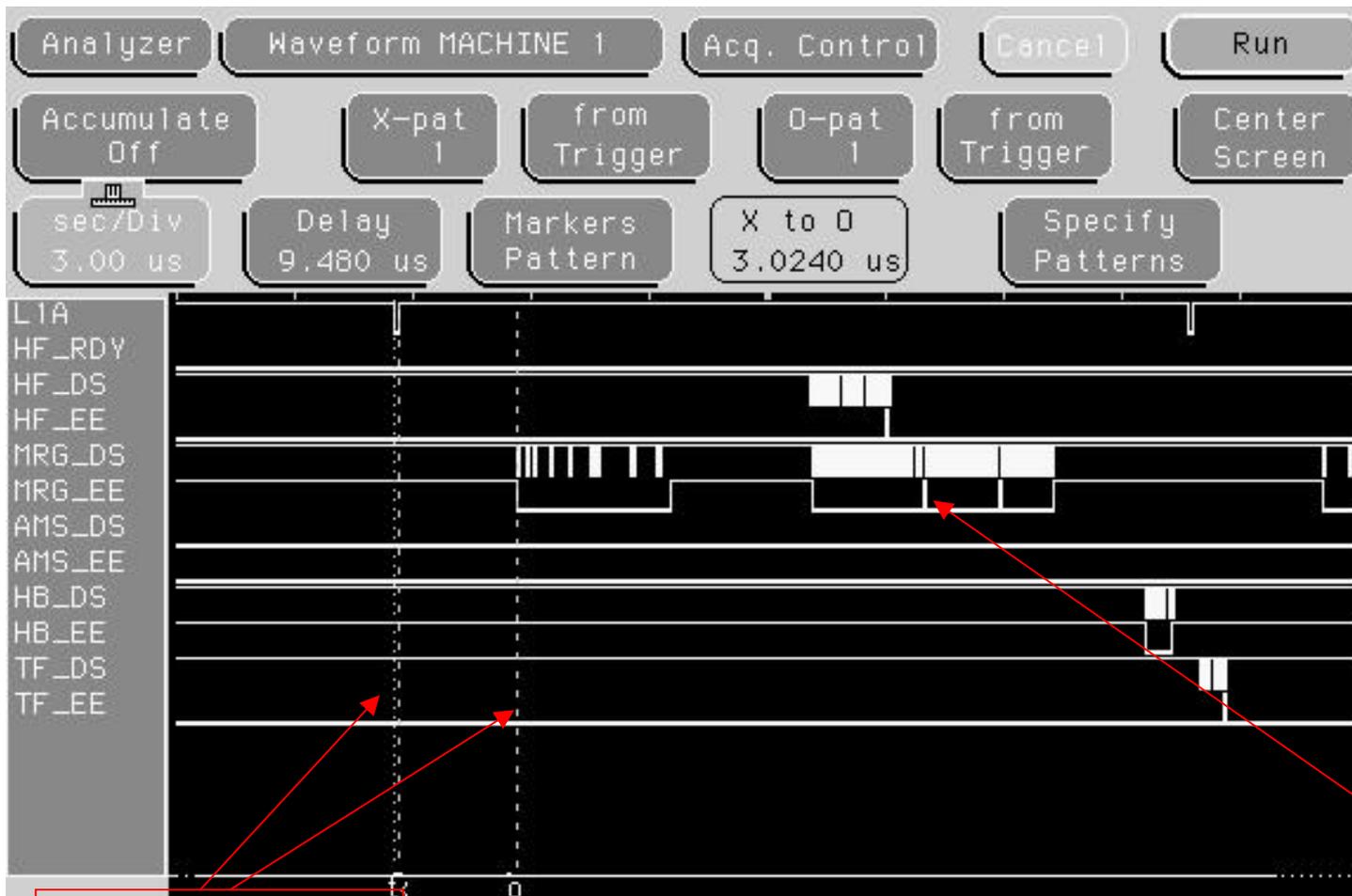


my laptop + NI  
PCMCIA GPIB



- LA: use pod 4
- 0: SC, L1A
- 1: HF, READY
- 2: HF, DS
- 3: HF, EE
- 4: MRG, DS
- 5: MRG, EE
- 6: AMS, DS
- 7: AMS, EE
- 8: HB, DS
- 9: HB, EE
- 10: TF, DS
- 11: TF, EE

# SVT TIMING STUDIES: CAPTURED EVENT



Real SVT  
wedge0  
event,  
HF: YES  
AMS: no

MRG releases  
EE line when  
no DS

markers x,o

# SVT TIMING STUDIES: SOFTWARE

- Compiled for MS windows (tested under MS win 2000)
- Source code in Visual Basic
- Needs a PCMCIA GPIB (Luciano has ordered one ...  
I borrowed one from the Technical Division)
- Install package + source code of the latest version can be found in //CDFSERVER1/cdfusers/spinella/svt\_time

# SVT TIMING STUDIES: SOFTWARE 2

The screenshot shows the 'SVT TIMING MEASUREMENT' software window. At the top, it displays 'HEWLETT PACKARD,1660C,0,REV 02.00' and 'LA ID'. Below this is an 'Acq dir' field containing 'D:\vb\_projects\svt\_timing\'. On the right, there are 'exit', 'Get conf', and 'Send conf' buttons. A 'single capture' button is also present. In the center, there are 'startcapture' and 'stop capture' buttons. The 'startcapture' button is highlighted with a dotted border. To its right, a text box shows '12' and the word 'acquired'. Below that, another text box shows 'Analyzing ...'. At the bottom left, there are checkboxes for 'Data dump' (unchecked) and 'Enable timing studies' (checked). On the right side, there is an 'Enabled' section with checkboxes for 'HF' (unchecked), 'MRG' (checked), 'AMS' (checked), 'HB' (checked), and 'TF' (checked). At the bottom, there is a histogram showing the distribution of time measurements in microseconds. The x-axis is labeled 'microsec' and ranges from 0 to 40. The y-axis ranges from 0 to 4. The histogram shows several bars, with the highest peak at approximately 18 microseconds. A label 'L1 to TF EE' points to the histogram.

**Acquisition directory**

**Start & stop data taking**

**2 working modes:**  
1. DATA DUMP  
2. TIMING STUDIES

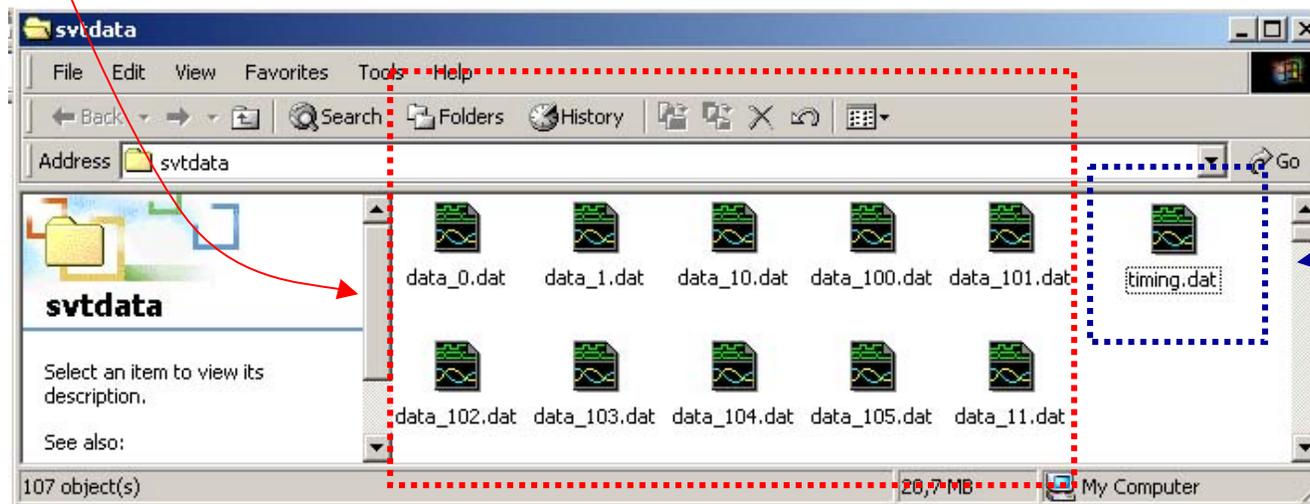
**Downloads & uploads the current configuration to the LA  
A good one is in the install directory**

**Connected boards**

**Real time histogram of L1A to TFEE time**

# SVT TIMING STUDIES: SOFTWARE 3

- **Data dump:** waveforms are downloaded from LA as fast as possible. The file format, binary, is described in LA manual. Acquisition rate: ~ 2sec /each, file dimension is 200 Kbyte. No analysis is performed.
- **Timing studies:** LA markers are moved to search for the needed DS and EE edges. X marker is set to the leading edge of the L1A, O marker is moved following the requested rule. Then the Xotime is downloaded and timing data are reported in timing.dat file. Acquisition rate ~ 20 sec/each



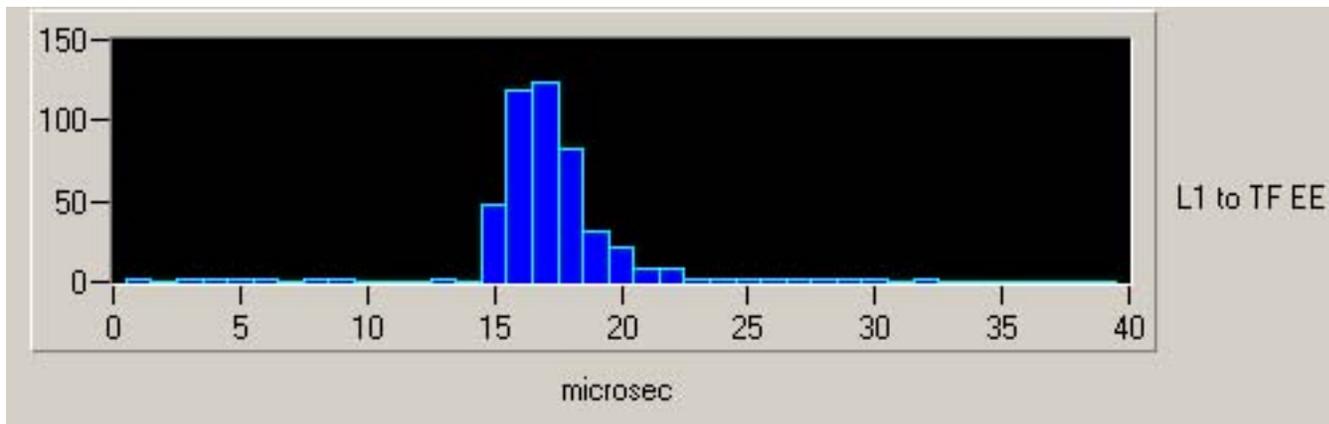
# SVT TIMING STUDIES: timing.dat

```
0  9.90000E37 9.90000E37 9.90000E37 +4.22400E-06 ...
1  9.90000E37 9.90000E37 9.90000E37 +4.22400E-06 ...
2  9.90000E37 9.90000E37 9.90000E37 +3.87200E-06 ...
•   ...
•   ...
```

- Each time is in seconds
- 12 columns, the first is the event number, others L1A to ... (see slide 1 for the order)
- 9.90000E37 means that the time was not measured, or the board is not enabled

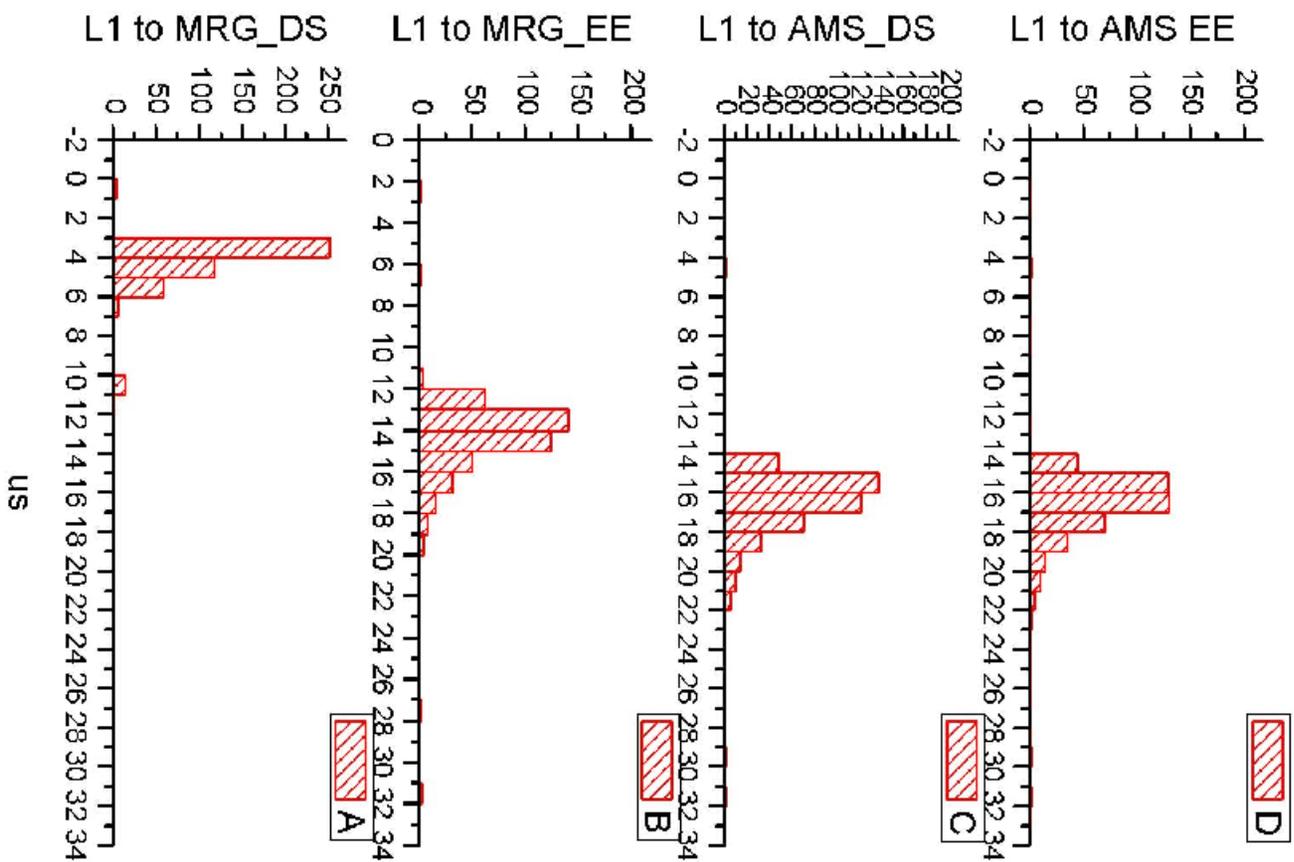
## SVT TIMING STUDIES: data taken 1/11/02

- software started Friday 1/11/02 9:30 PM
- ran for ~ 2 ½ hours
- 462 events acquired with timing studies enabled
- NO HF installed, other boards connected



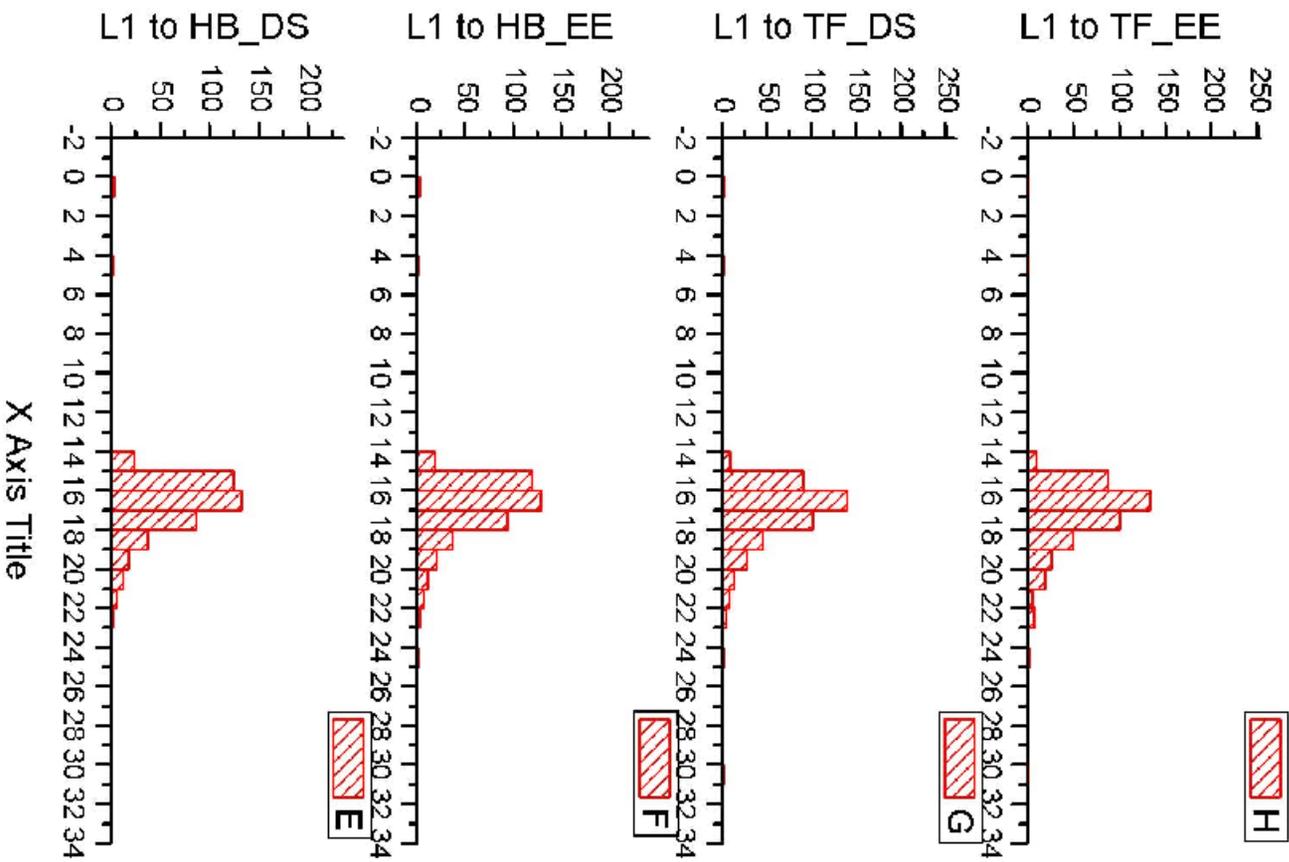
- online histogram, L1A -> TFEE

# SVT TIMING STUDIES: of f line (1)



Analysis of timing.dat data

# SVT TIMING STUDIES: of f line (2)



Analysis of timing.dat data

## SVT TIMING STUDIES: conclusions

- The task is almost concluded in his first version.
- Annamaria has installed and used the package, so can teach interested people.
- Alex has the documentation to unpack the waveform files.
- If we are interested, I'd like to modify the program so that the waveforms are downloaded in memory, analyzed by the software in real time and then discarded, so the rate could remain ~3sec/ each and no disk is filled ...

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