

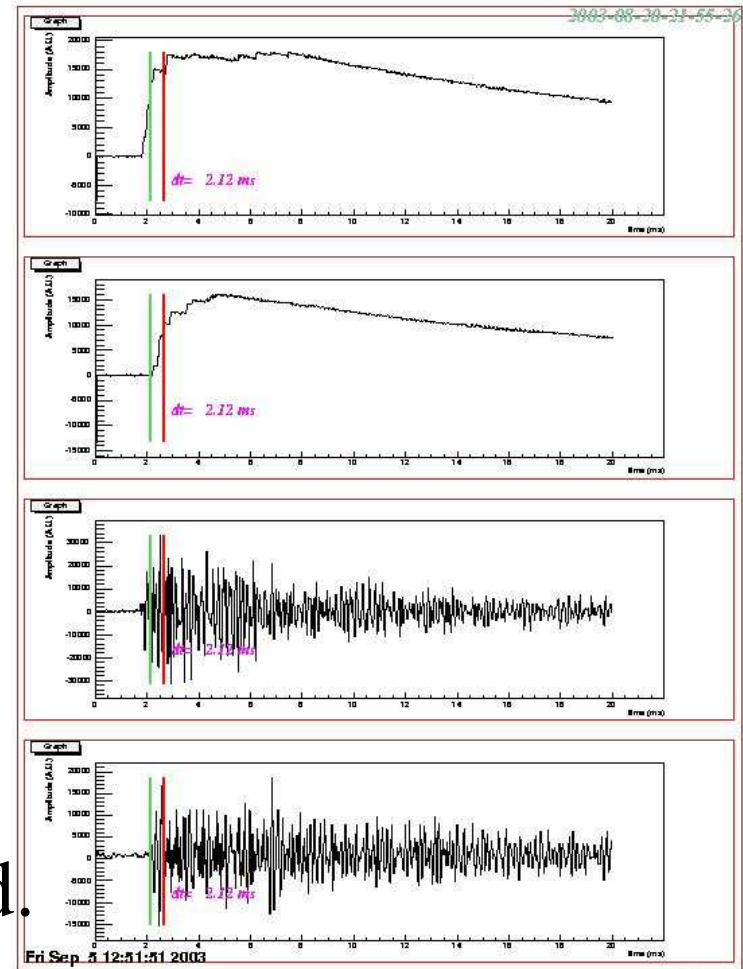
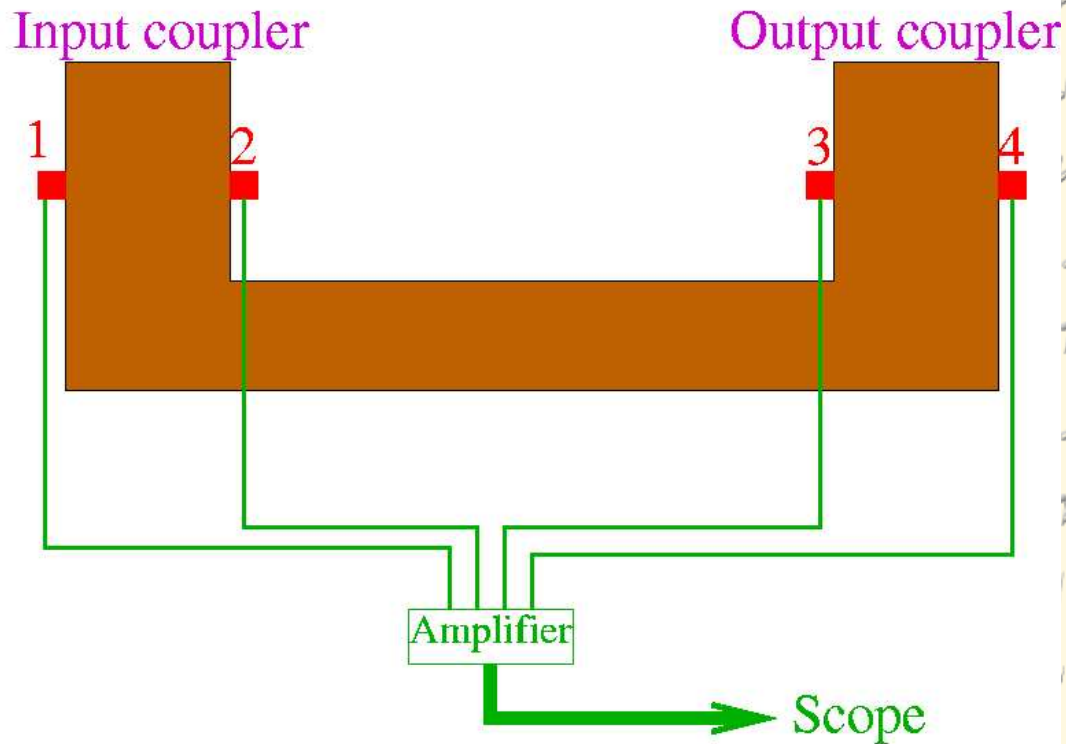
Analysis of the RF & acoustic data recorded during the commissioning of a C-band module

- Acoustic set-up 1
- Acoustic set-up 2
- RF data analysis
- Correlations
- Future plans

Linac R&D meeting 2.10.2003

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<http://www-jlc.kek.jp/~nicolas/cband/>

Acoustic set-up 1



2x2 acoustic sensors

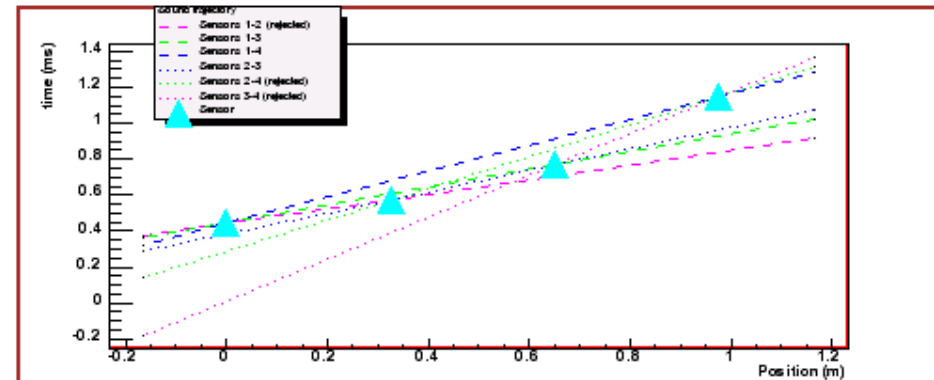
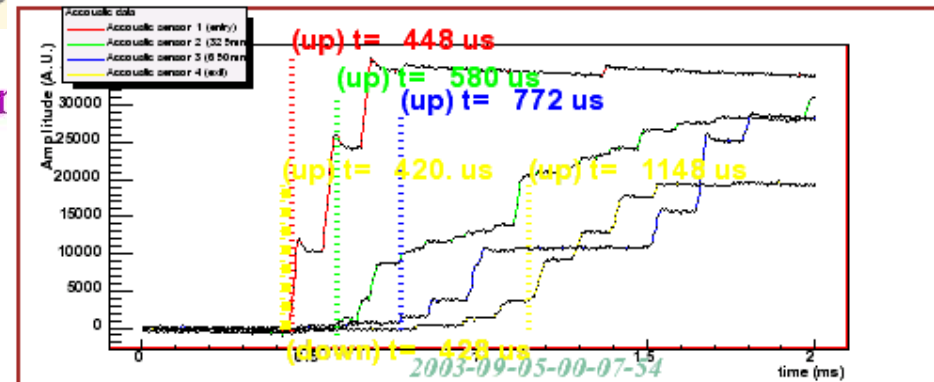
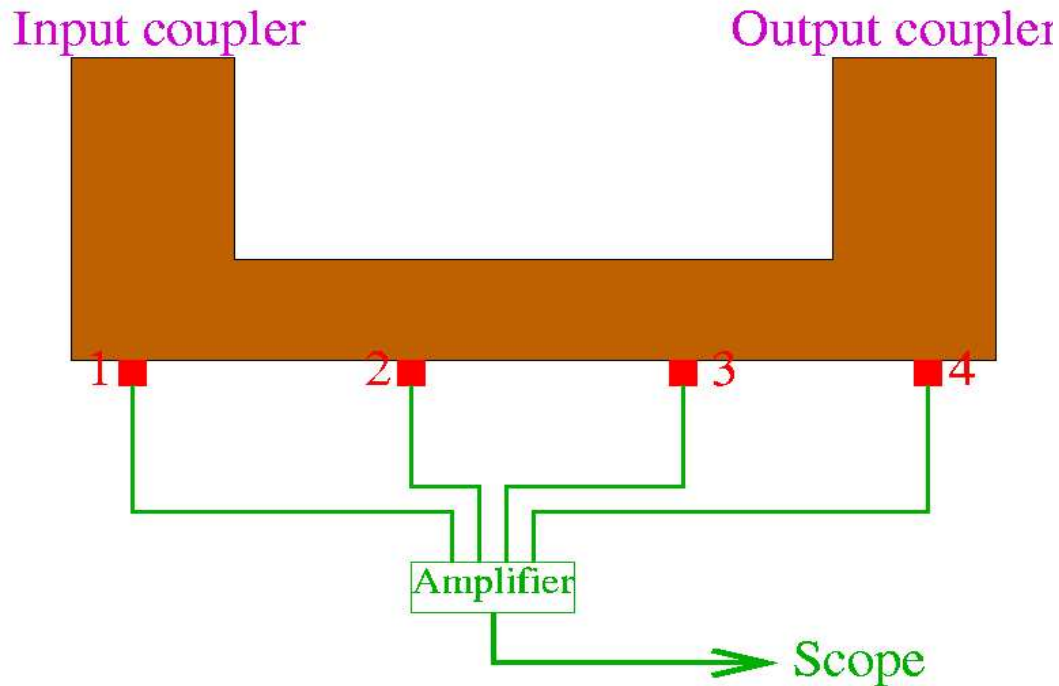
filtered ("DC" mode)/non filtered.

Non filtered did not bring extra info...

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Acoustic set-up 2



4 acoustic sensors
filtered (“DC” mode)
at different positions...

Acoustic event

Acoustic Data: 2003-09-05-00-07-54

Sensor order correct

Sensor order: 1 2 3 4

Time (first - second) sensor: 132 us

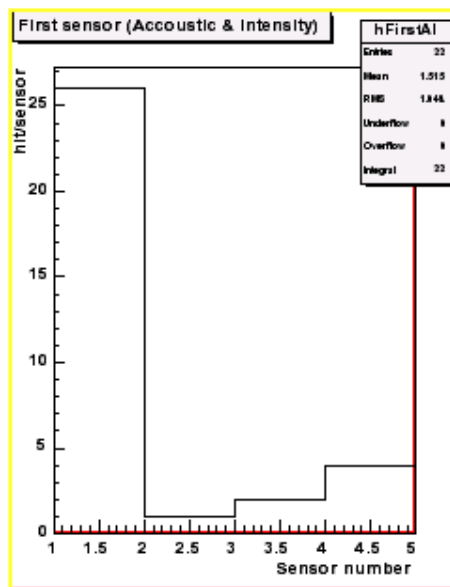
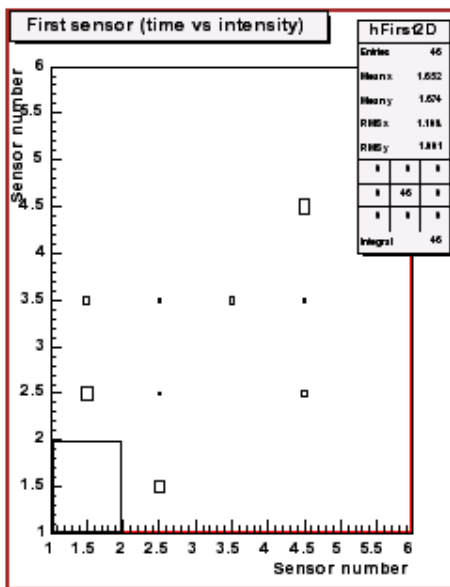
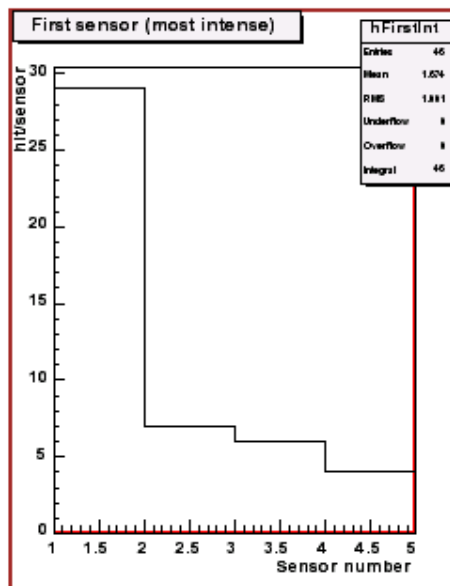
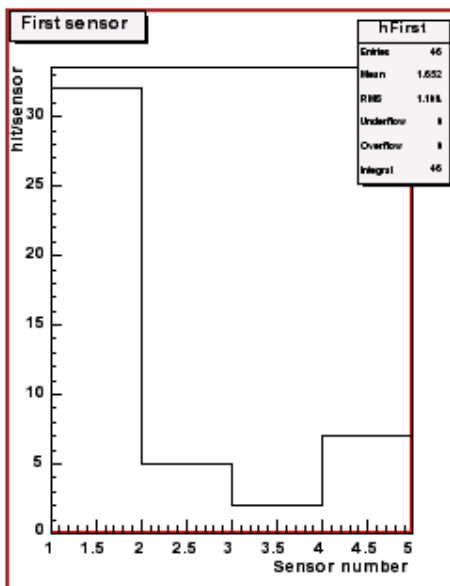
Better resolution on the bkn position...

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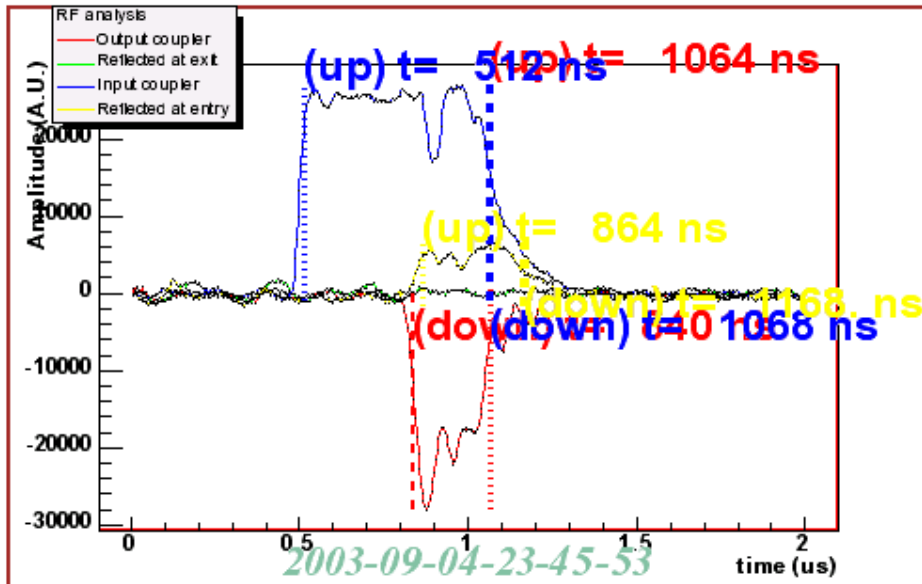
<http://www-jlc.kek.jp/~nicolas/cband/>

Acoustic data analysis



- Signal is sometimes hard to understand
- Correlations between time arrival & intensity improve the resolution.
- Sensor 1 gets the more breakdowns
- Resolution limited by the number of sensors

RF data analysis



RF event

RF Data: 2003-09-04-23-45-53

Delta t 200. ns

Breakdown time 224. ns

Difference between the end of the outgoing wave and the arrival of the reflected wave gives the position of the bkdown.

According to Marc Ross (SLAC) using the phase information increases the resolution (not tried yet)

RF data analysis

(2)

Top plot: Wave length

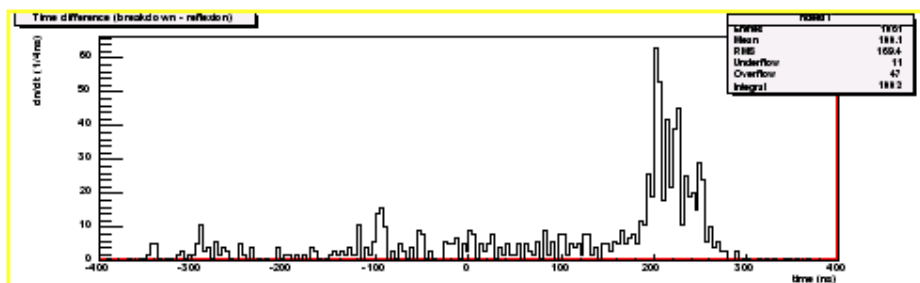
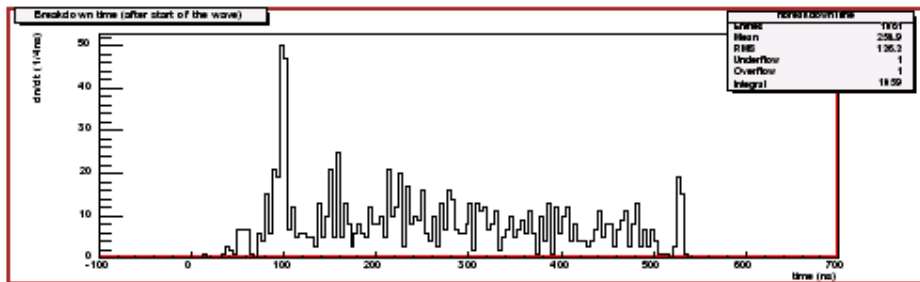
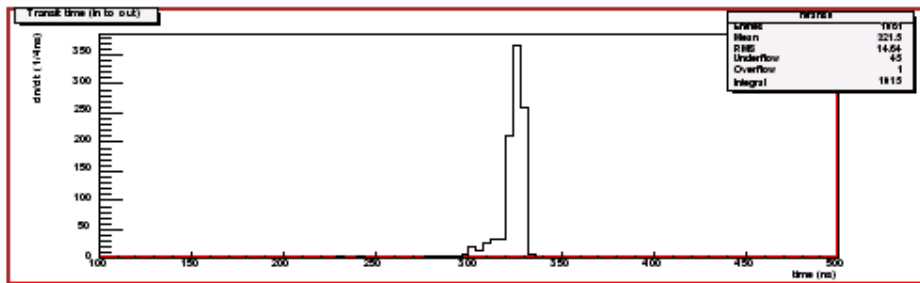
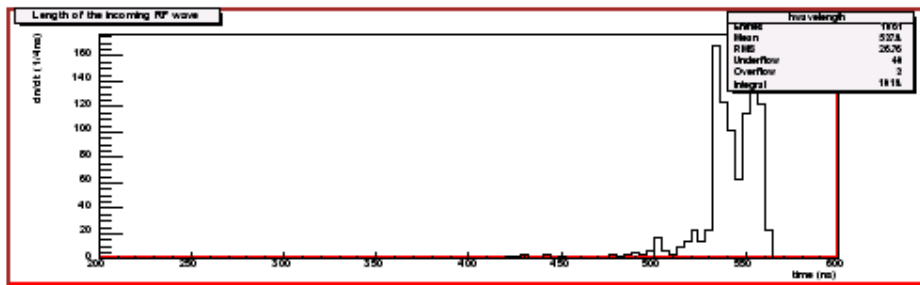
Second plot: transit time

(should be constant, gives an estimation of the resolution)

Third plot: Bkdn time

(where in the wave the bkdn occurs?)

Bottom plot: Bkdn position

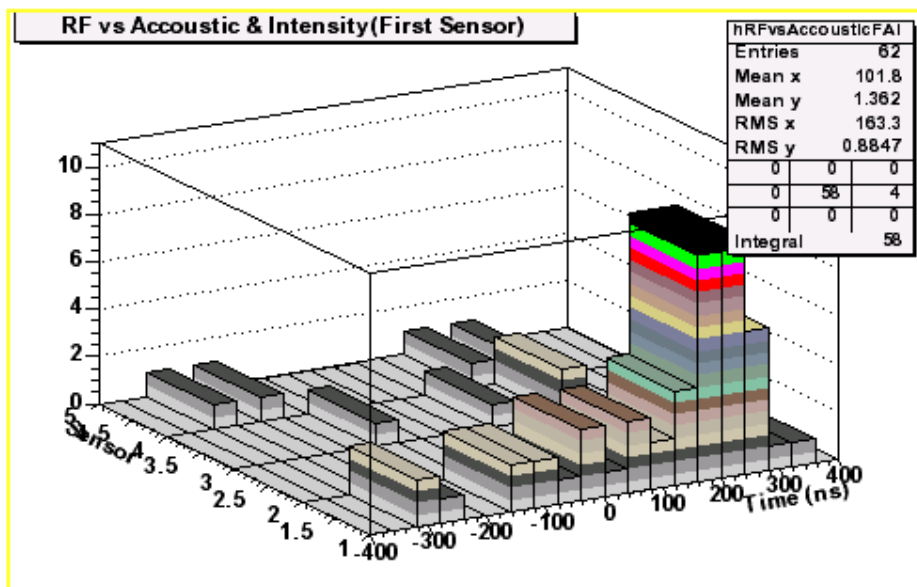
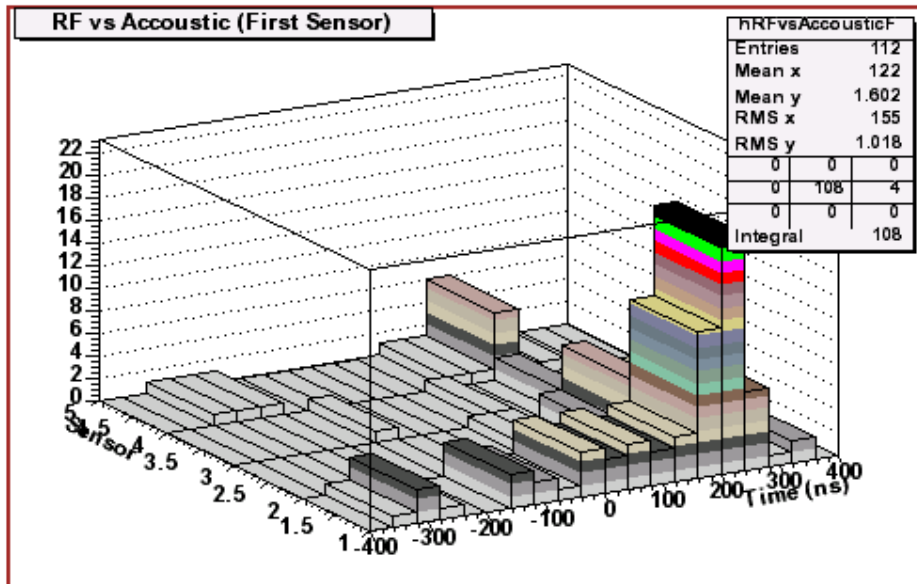


Correlations

For some events RF and Acoustic data provide different information.

But

for most events they agree to point the Input Coupler as the breakdown source.



Future plans

- Second phase of data acquisition starts this week (in the Linac)
- New sensors will be installed during the next maintenance day (9th of October)
- More data & more sensor will give be a better resolution
- Possible to focus on specific area where many breakdowns occur to identify faulty cell