

Electron Cloud studies in the IRs

Contents:

1. EC in IR12 with 56x56 bunches
2. EC in IR12 with 111x111 bunches

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Fill 4791

Bucket spacing:	6
Bunch charge (Au ions):	1.1×10^9
Total Beam/ring (Au ions):	58×10^9
Total # bchs/ring:	56
Max. Pressure (IR12):	2.5×10^{-9} Torr

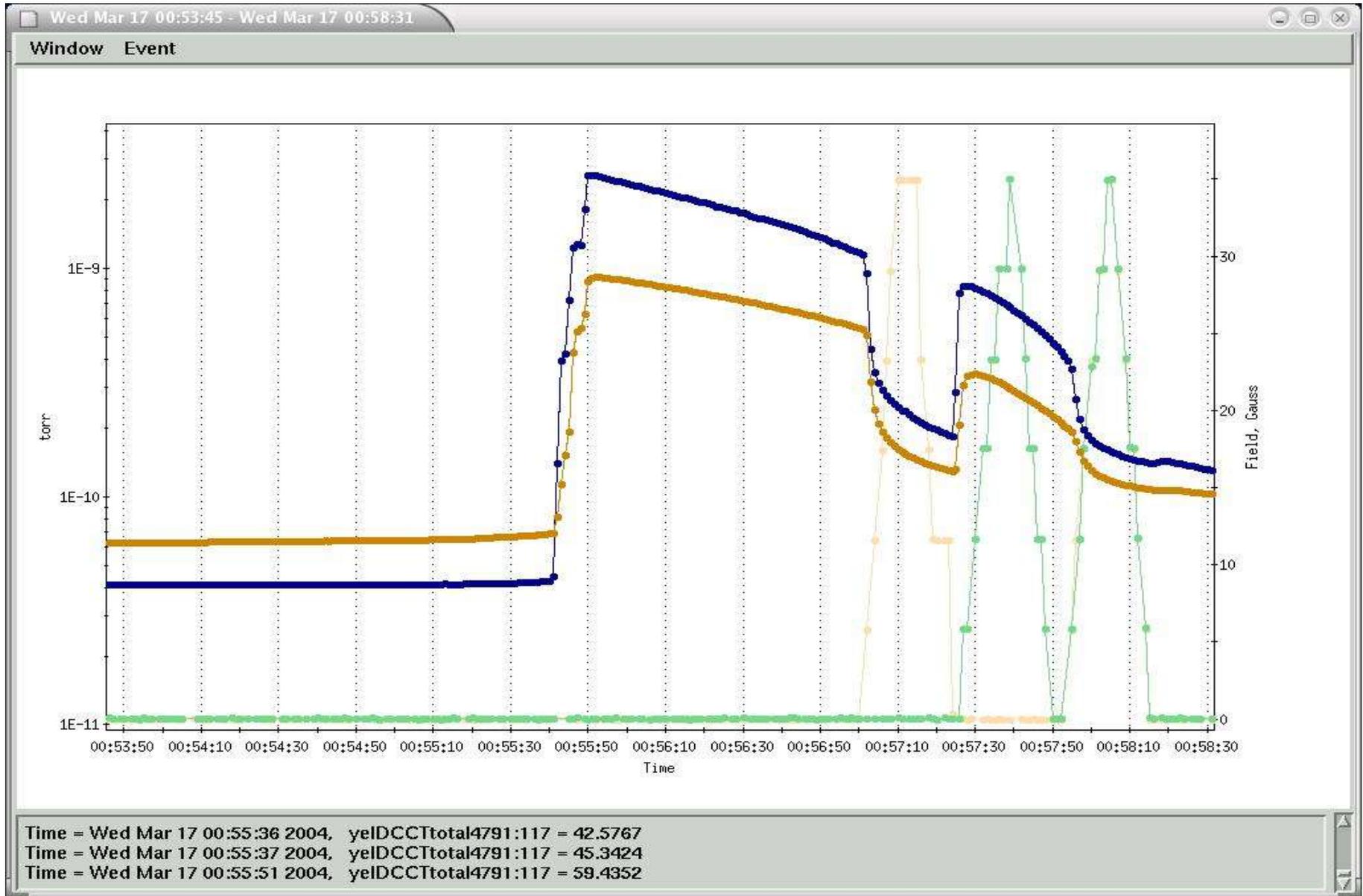
Studies:

Solenoid Test:	effective
Energy spectrum:	no signal
Beam lost when cogging.	
No ramping.	



- P rised only at IR12. Other IRs? (under studies...)
- Threshold: 56 blue + 40 yellow bunches.

Solenoid Test:



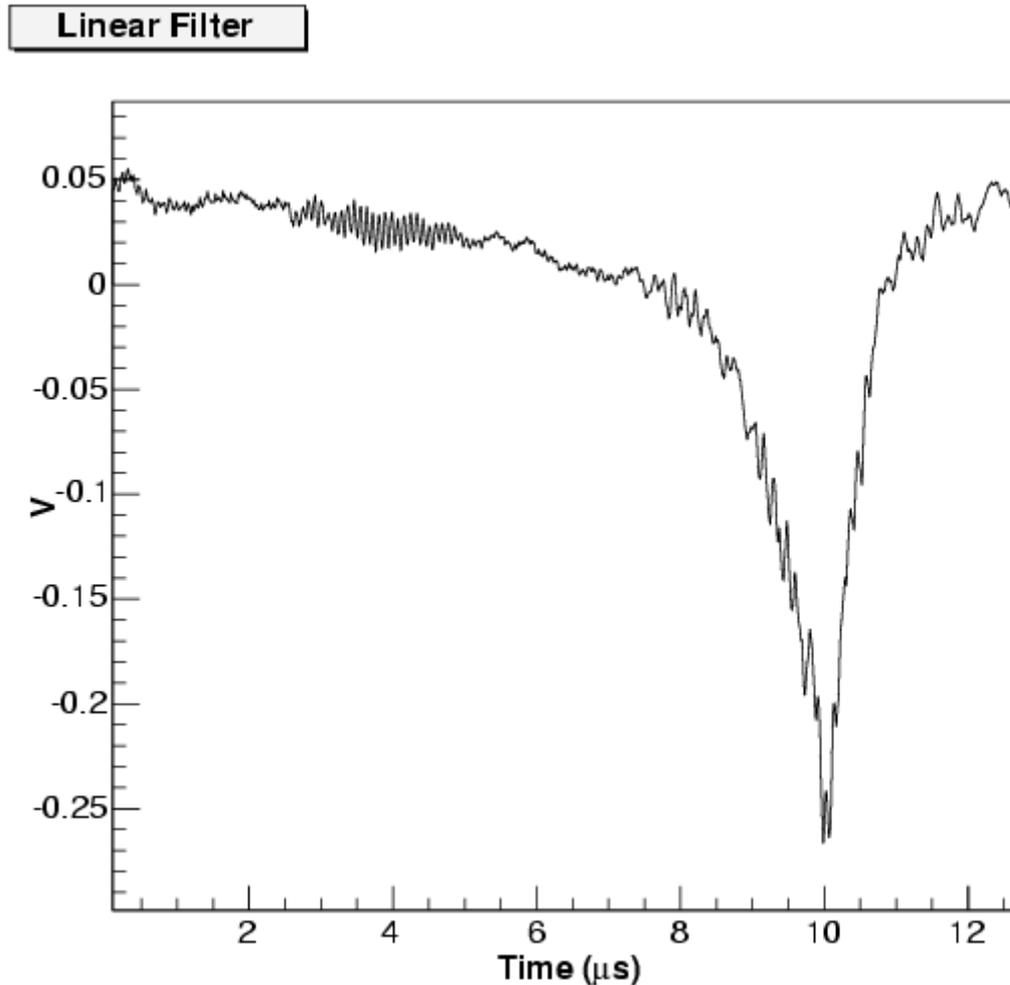
2. Fill 4794

Bucket spacing:	3
Bunch charge (Au ions):	1.1×10^9
Total Blue intensity (Au ions):	95×10^9
Total Yellow intensity:	89×10^9
Total # bchs/ring:	111
Max. IR Pressure (IR12):	7×10^{-8} Torr
Max. str. sect. Pressure:	5×10^{-8} Torr - (bi8)

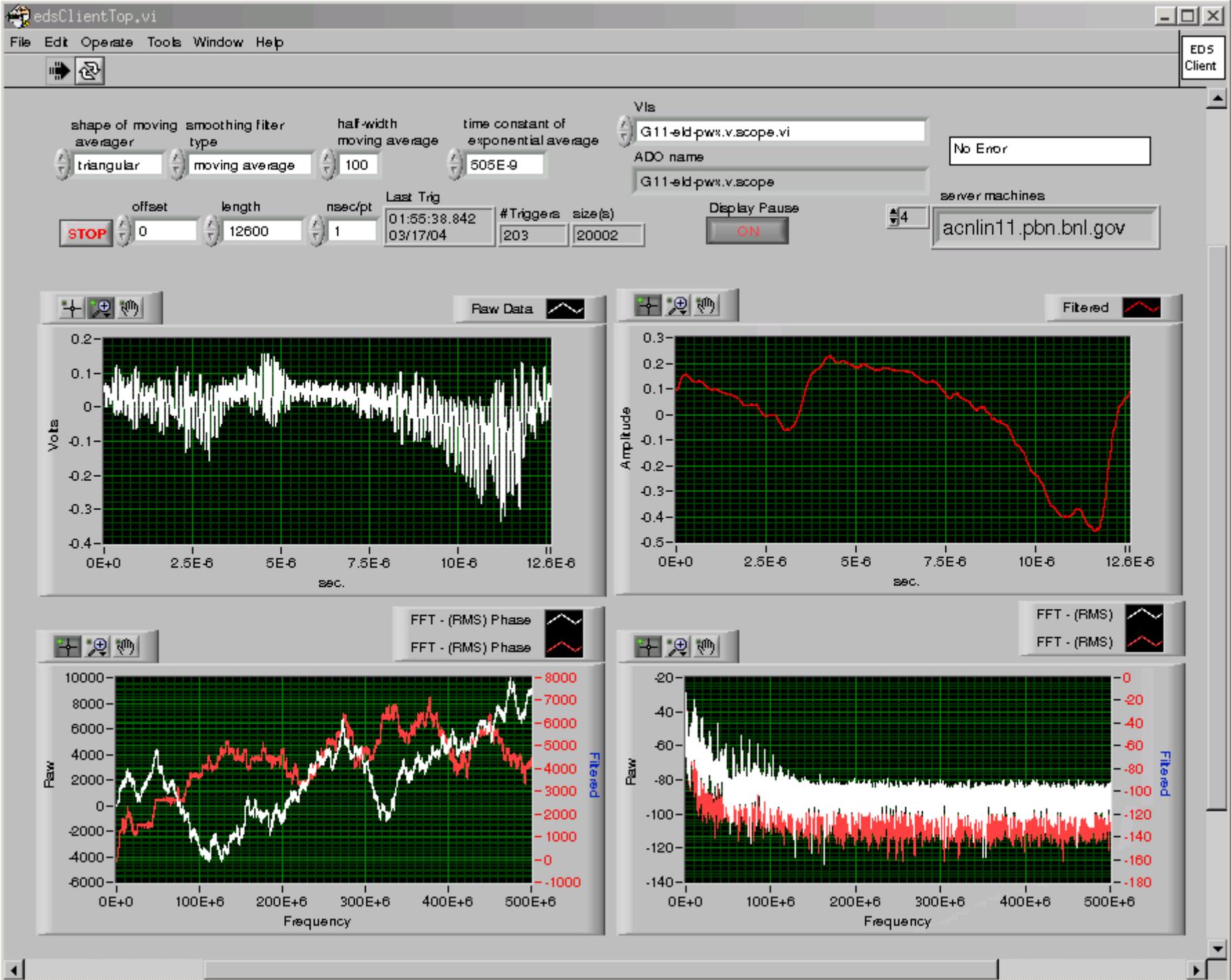


Threshold: $70 \times 10^9 \text{ Au}^{79+}$ blue + $19 \times 10^9 \text{ Au}^{79+}$ yellow
 Again, pressure rised only in IR12.

Electron Signal



Noise level in ED did not allow e- energy spectrum.
On-going effort for filtering signals.



Conclusions:

- Solenoid fields of ~ 10 Gauss can be effective for “weak” EC.
- For 3 buckets spacing, effectiveness of solenoid field not fully clear.
- Total beam intensity threshold (6 buckets spacing): $105 \times 10^9 \text{ Au}^{79+}$
- Total beam intensity threshold (3 buckets spacing): $89 \times 10^9 \text{ Au}^{79+}$
- The ED data has to be filtered, and then analyzed with synchronism of two beams passing IR12.

Missing:

- Beam lost when shifting beams, no synchronism effect could be studied.
- No ramp --> no effect of bunch length.
- Noise did not allow to measure electron energy spectrum