Wire-scanner generated BLM beam dumps

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Emittance meeting

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Compare 2 scans (B1H) at 4 TeV beam currents and BLMQI.06R4.B1I20_MQY signals

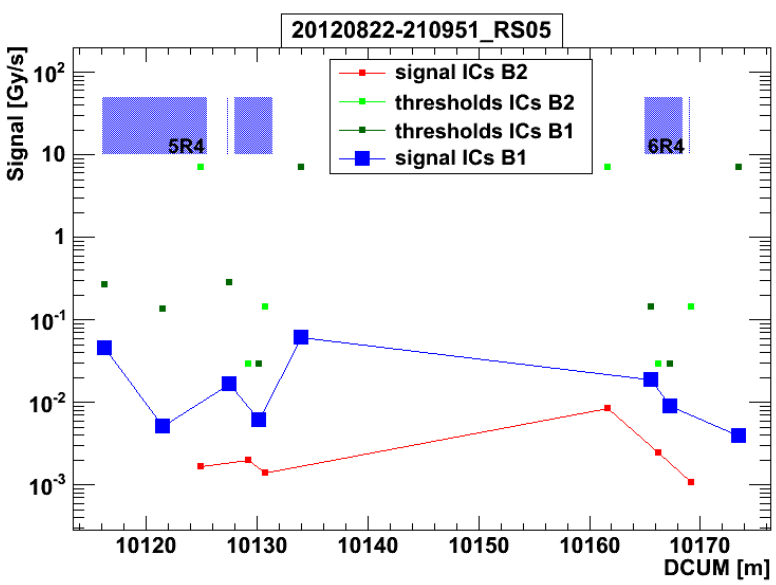
- Timestamp: 2012-Aug-22, 21:09:51 UTC
- System: B1H2
- BLM RS05: 0.0091 Gy/s
- BCTDC.A6R4.B1: 4.29E12
- BLM/BCT = 5.4e-18 Gy/p

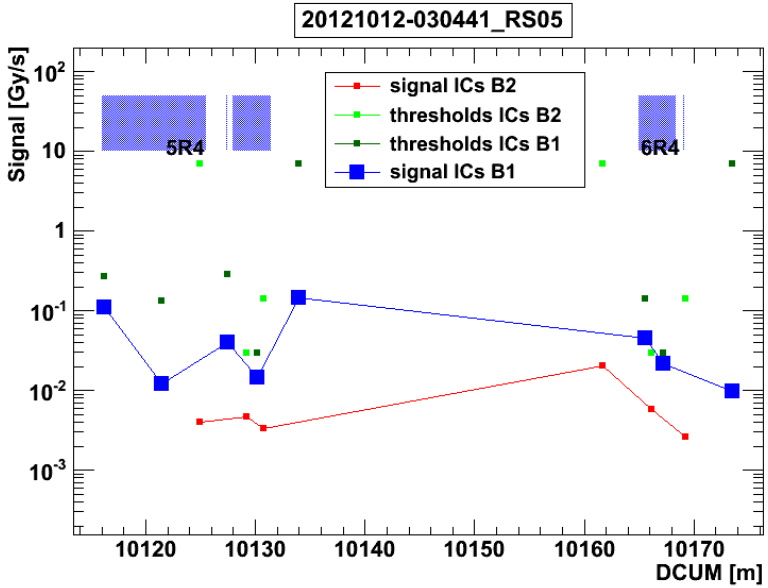
- Timestamp: 2012-Oct-12, 03:04:41 UTC
- System: B1H1
- BLM RS05: 0.0218 Gy/s
- BCTDC.A6R4.B1: 2.09E12
- BLM/BCT = 2.7e-17 Gy/p

It seems that after changing the scanner system (?) we are getting 5x more signal during the scan on monitor on Q6.

Needs a closer look to understand.

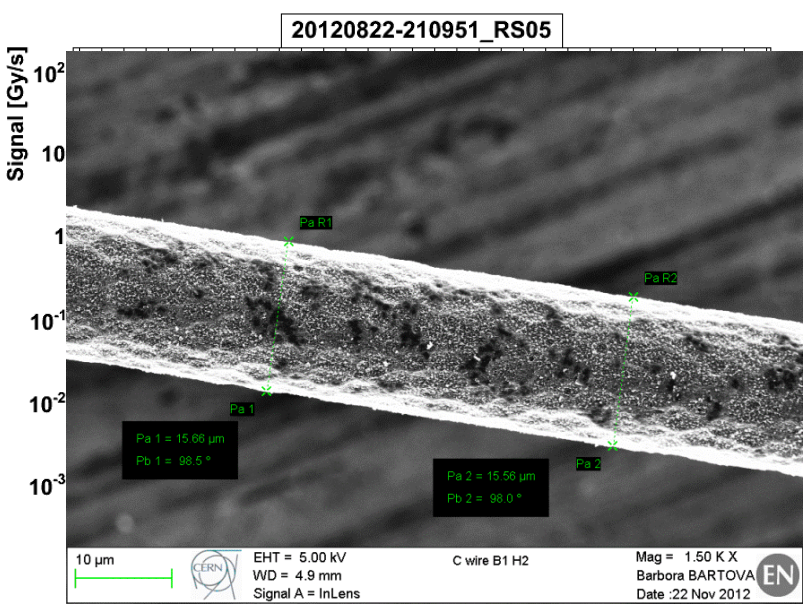
Comparison of loss profiles:

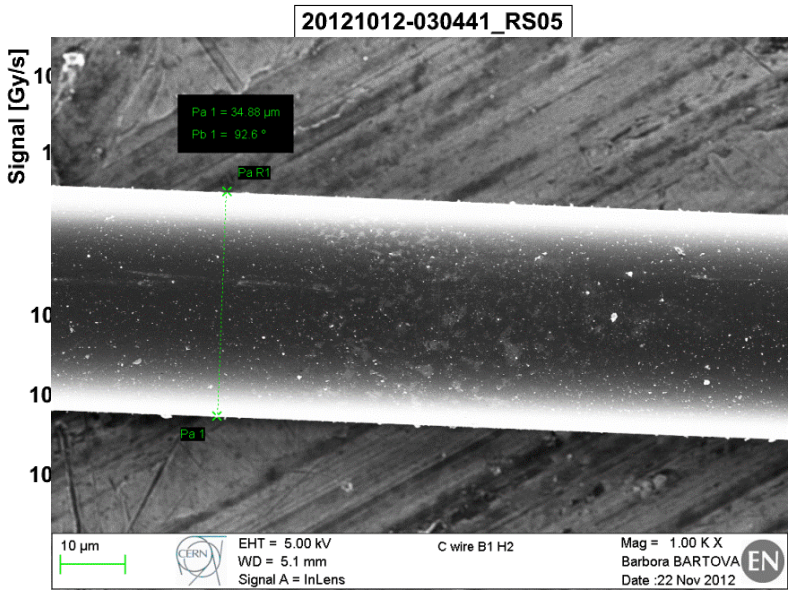




Both profiles are shifted up despite having half of beam intensity!

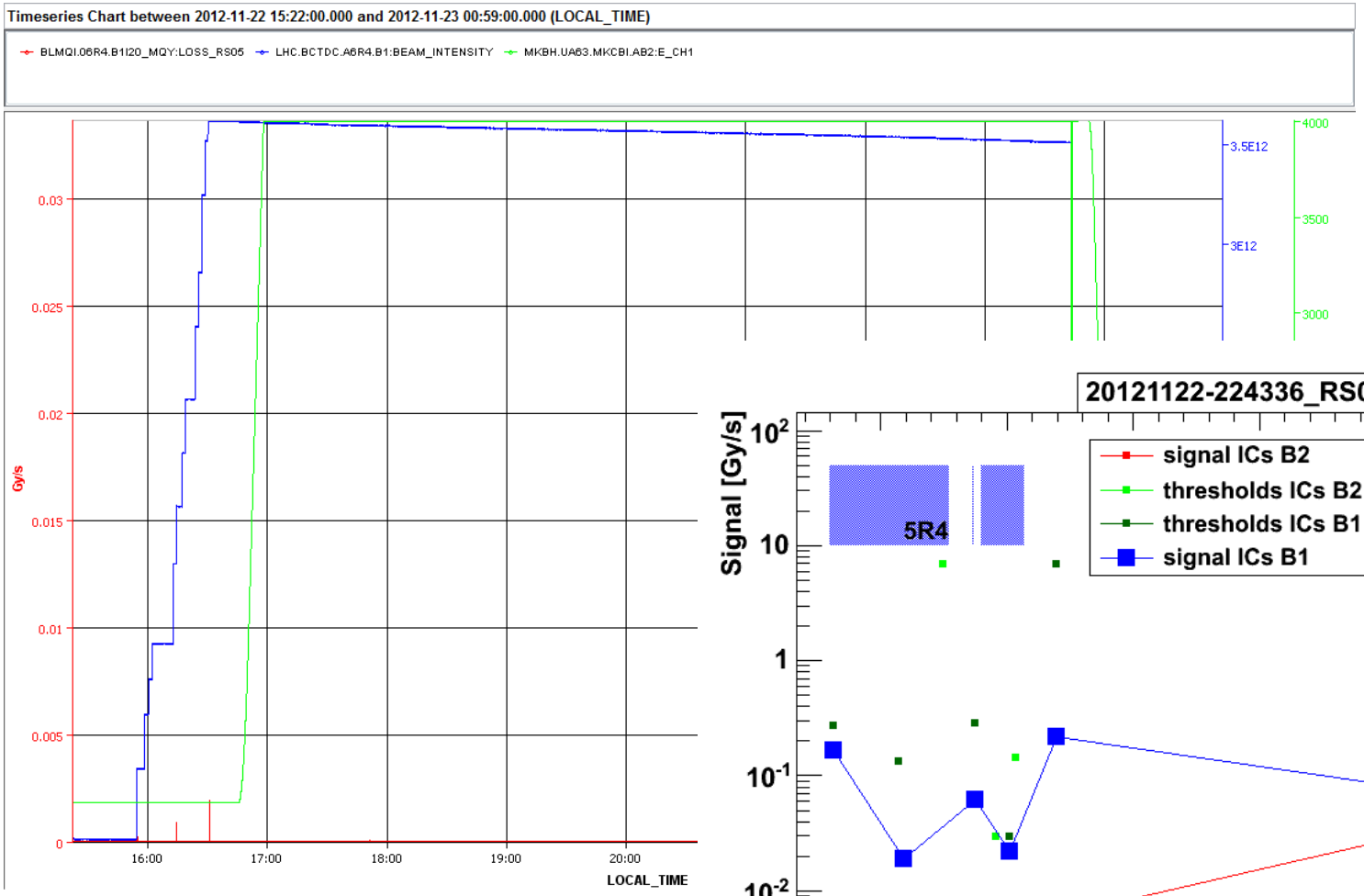
Comparison of loss profiles:





Can be explained IF wire diameter increased… and this is true!
Fiber volume increased 4 times, because new scanner system was used.
So the picture is:
*) wire evaporates slowly during “one batch at injection” scans

What about dump on November 22nd?



Vertical scanner, VdM fill

Compare 3 scans (B1) at 4 TeV beam currents and BLMQI.06R4.B1I20_MQY signals

- Timestamp: 2012-Aug-22, 21:09:51 UTC
- System: B1H2
- BLM RS05: 0.0091 Gy/s
- BCTDC.A6R4.B1: 4.29E12

- BLM/BCT = 5.4e-18 Gy/p

- Timestamp: 2012-Oct-12, 03:04:41 UTC
- System: B1H1
- BLM RS05: 0.0218 Gy/s
- BCTDC.A6R4.B1: 2.09E12

- BLM/BCT = 2.7e-17 Gy/p

- Timestamp: 2012-Nov-22, 22:43:36 UTC
- System: B1V1
- BLM RS05: 0.0335 Gy/s
- BCTDC.A6R4.B1: 3.5E12

- BLM/BCT = 2.4e-17 Gy/p

Key points of the last electron microscope analysis

- Scanning 144 bunches at injection in LHC leads to slow sublimation of wires.
- On SPS wires the traces of high temperature were found on the edges of the wires, close to the fork .
- Clearly SPS (rotational) wires break easier –

  less sublimated material lead to breakage.