Beam Dump Events during Stable Beams

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10th of August 2010

4 Beam Dumps during Stable Beams so far...

Event 1: 07-07-2010 @20:22:19

Event 2: 30-07-2010 @07:26:38

Event 3: 07-08-2010 @02:14:38

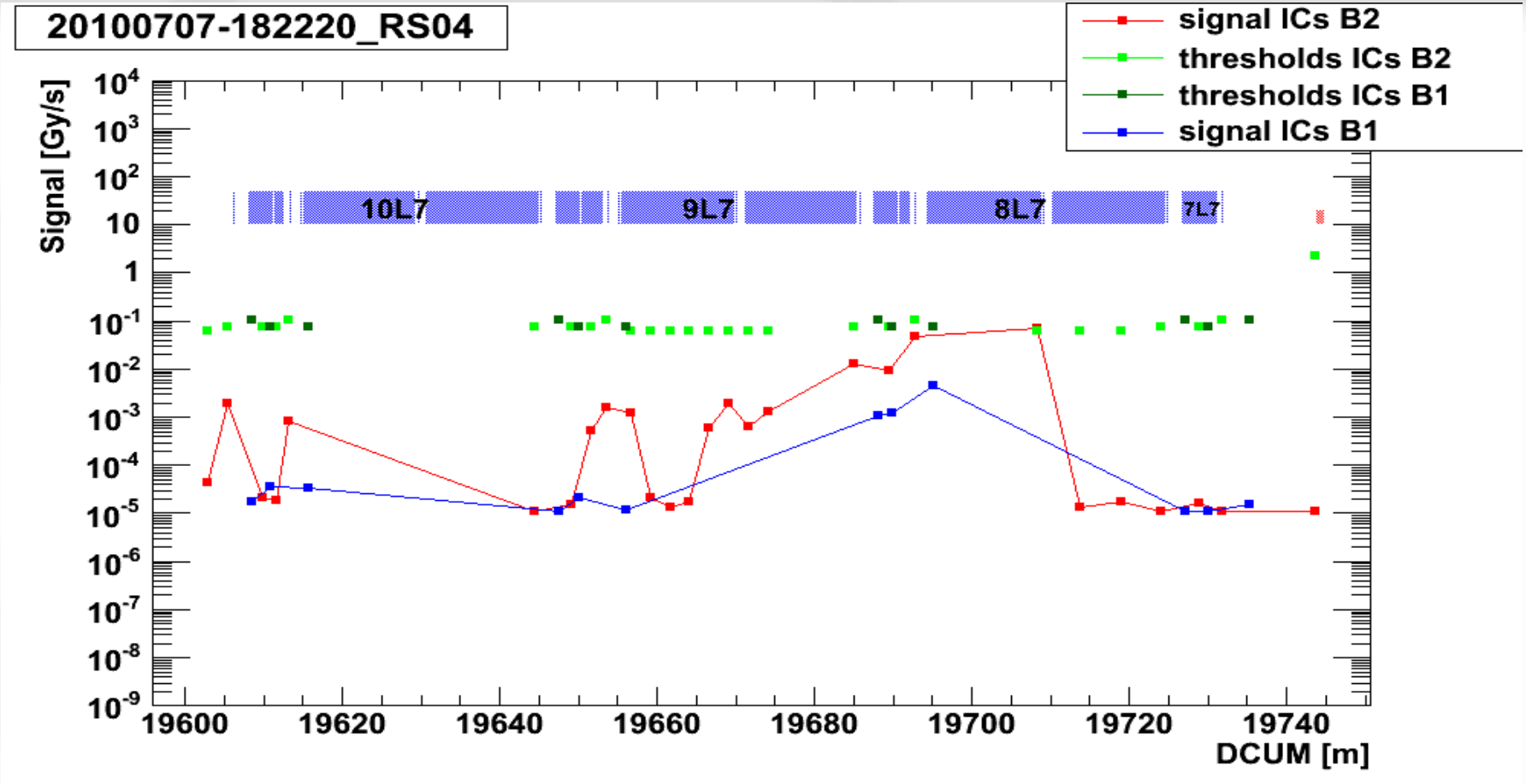
Event 4: 08-08-2010 @01:10:46

Investigation is on going

Detailed Analysis has started

Some preliminary results will be presented (very briefly)

Loss Map for Event 1 on 07-07-2010 20:22:19 RS04



- Beam dump for RS04 = 640musec on BLMEI.08L7.B2I30_MBB
- B2 loss
- Losses seem to start either at the end of MBB or between the two MBBs
- The losses are also slower (> 1 sec)

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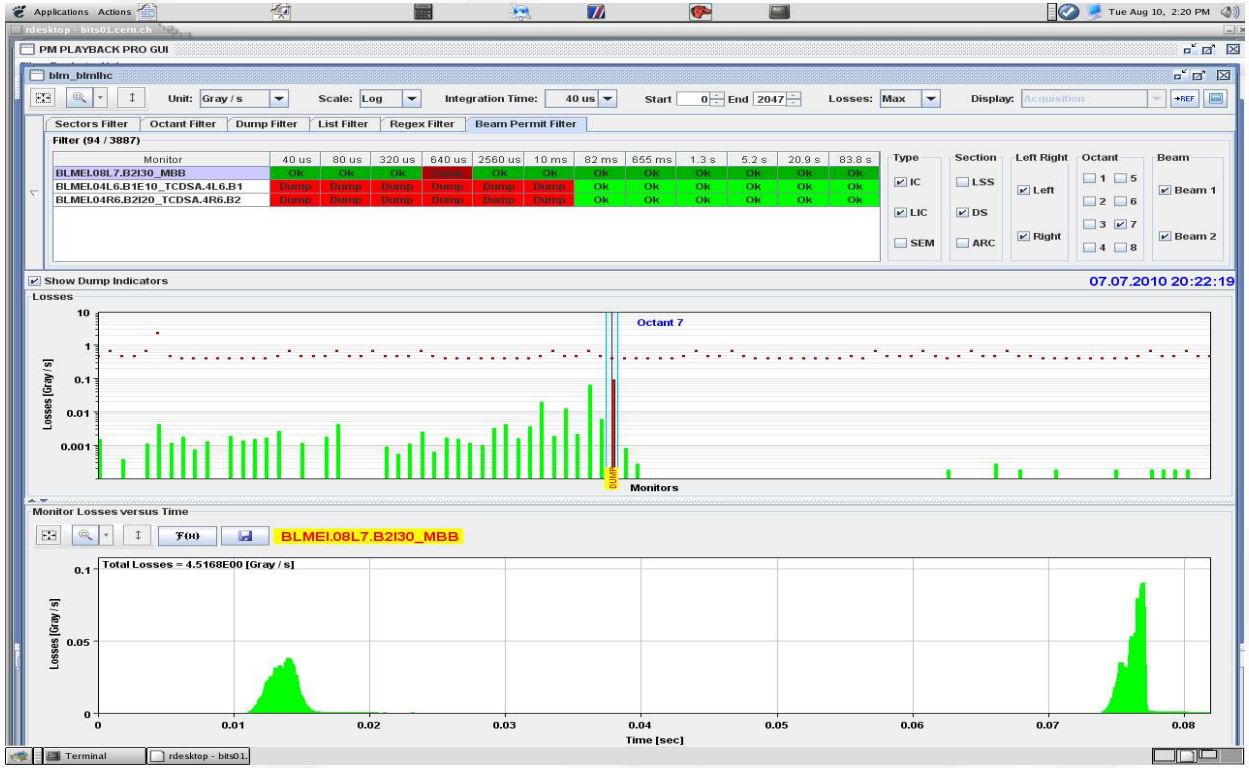
Long BLM PM Buffer Data Analysis for Event 1

Choose longer BLM PM buffer for analysis

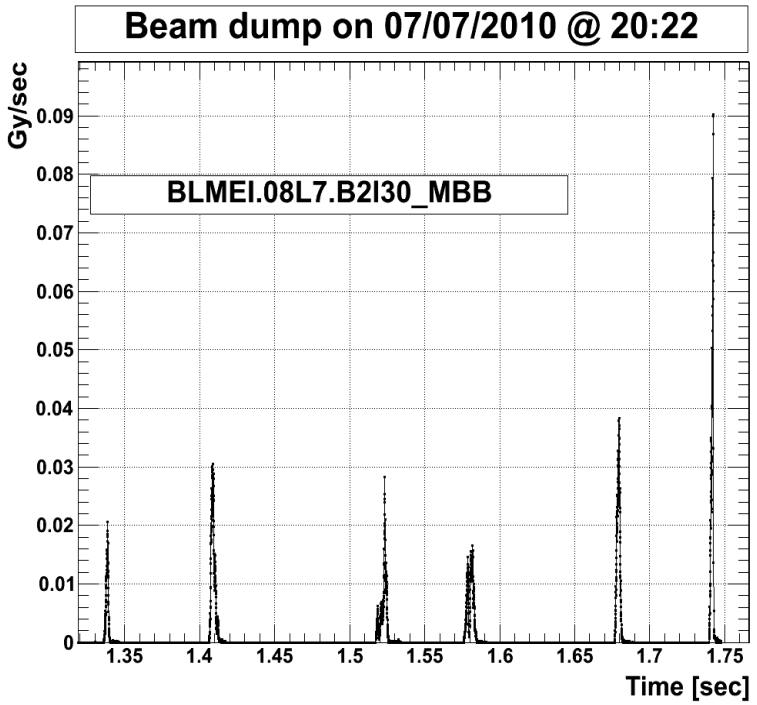
This allows to check for losses before the beam dump

More detailed analysis for event 1: MPP talk 16-07-2010 (A. Nordt)

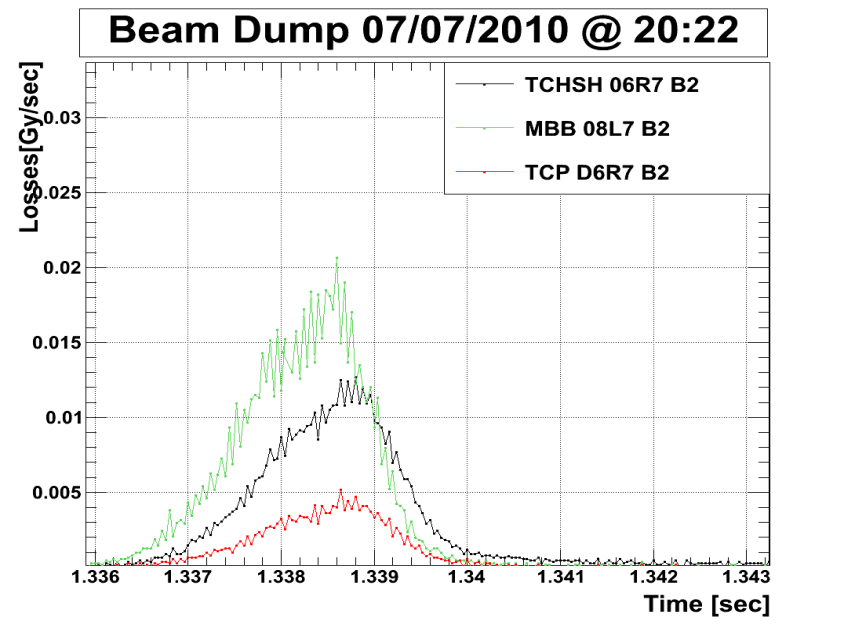
PM application: BLM data of 0.082 sec

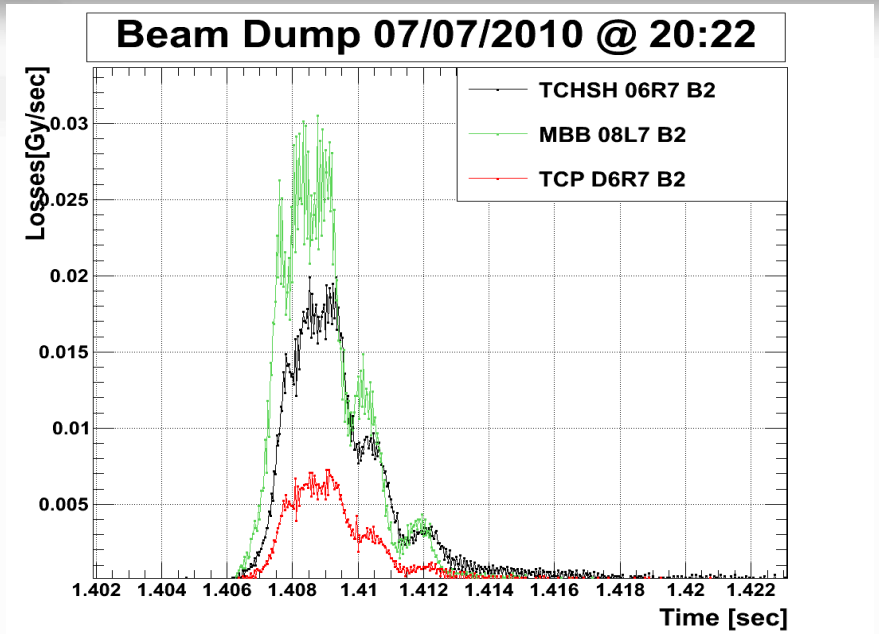


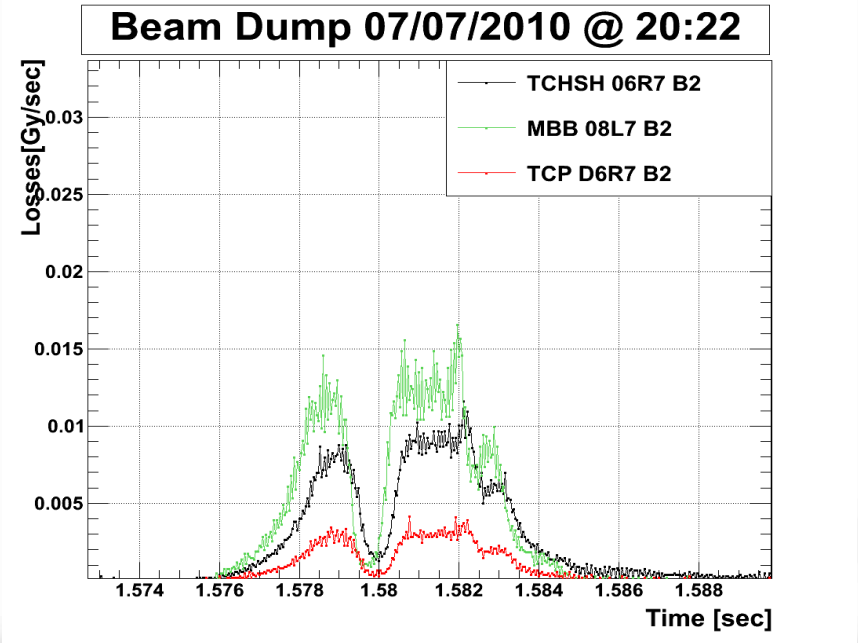
Longer PM buffer: BLM data of 1.72 sec

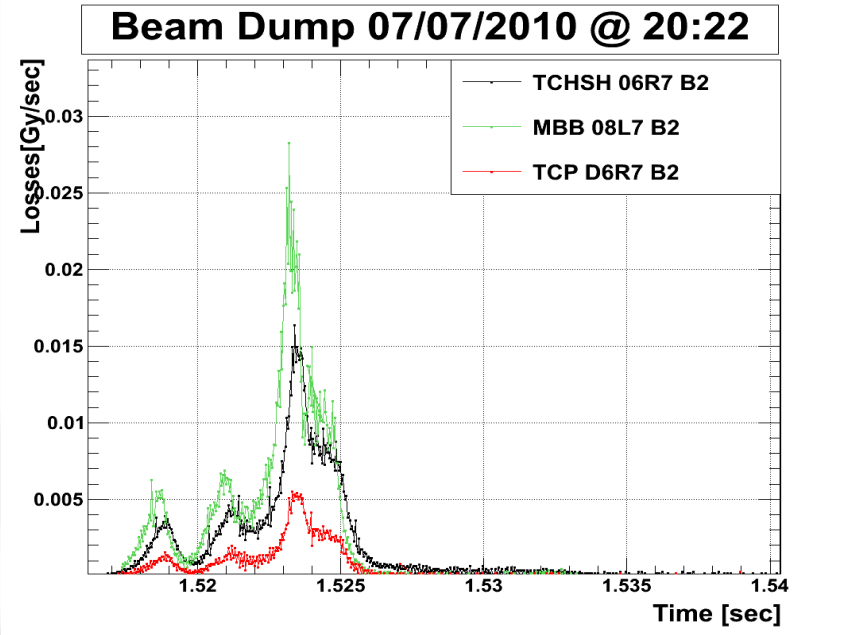


Event 1 on 07-07-2010 @ 20:22:19 :: First 4 bumps

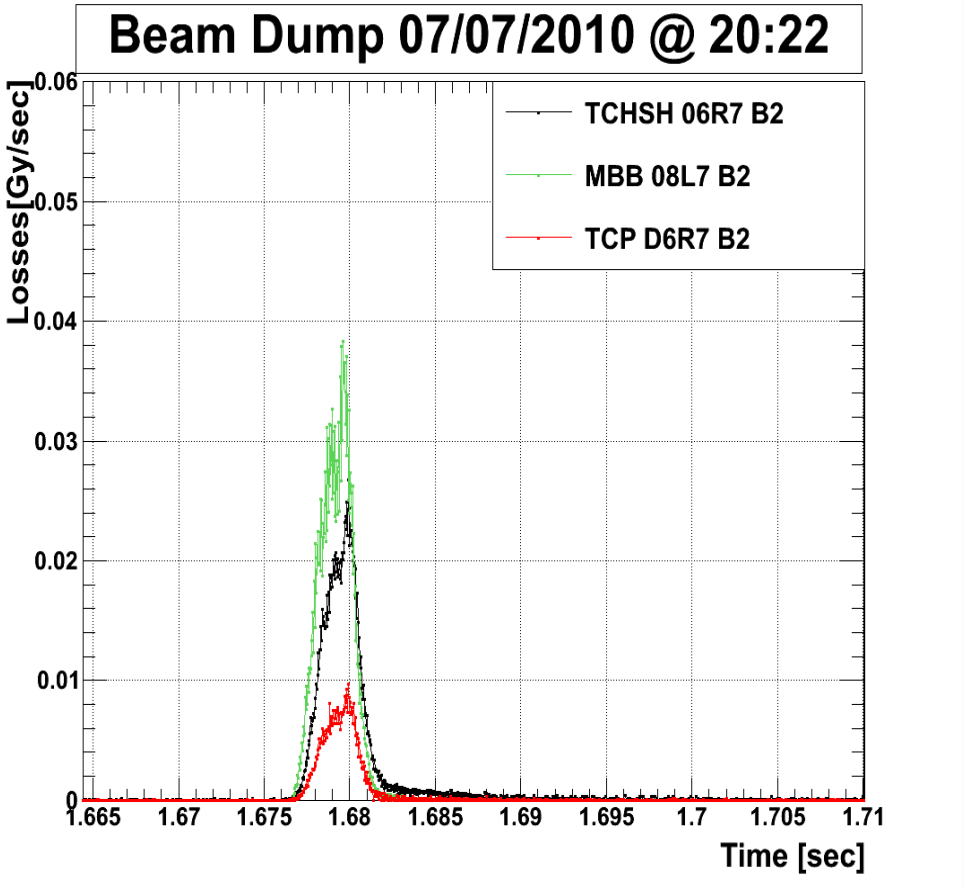


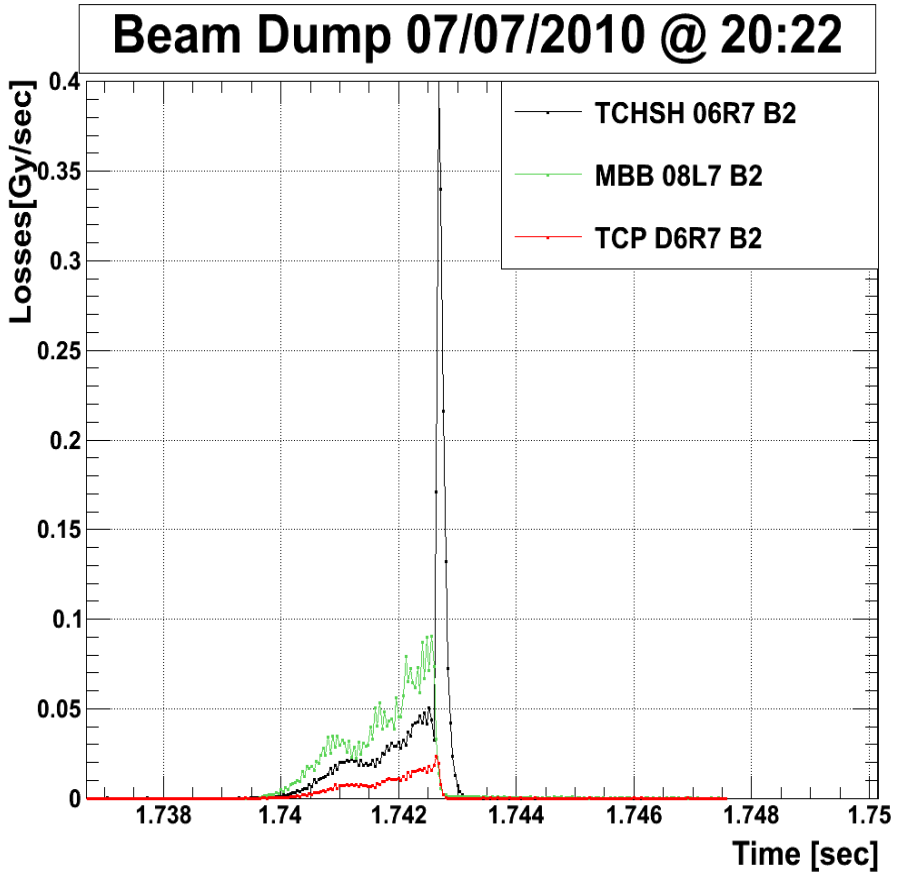




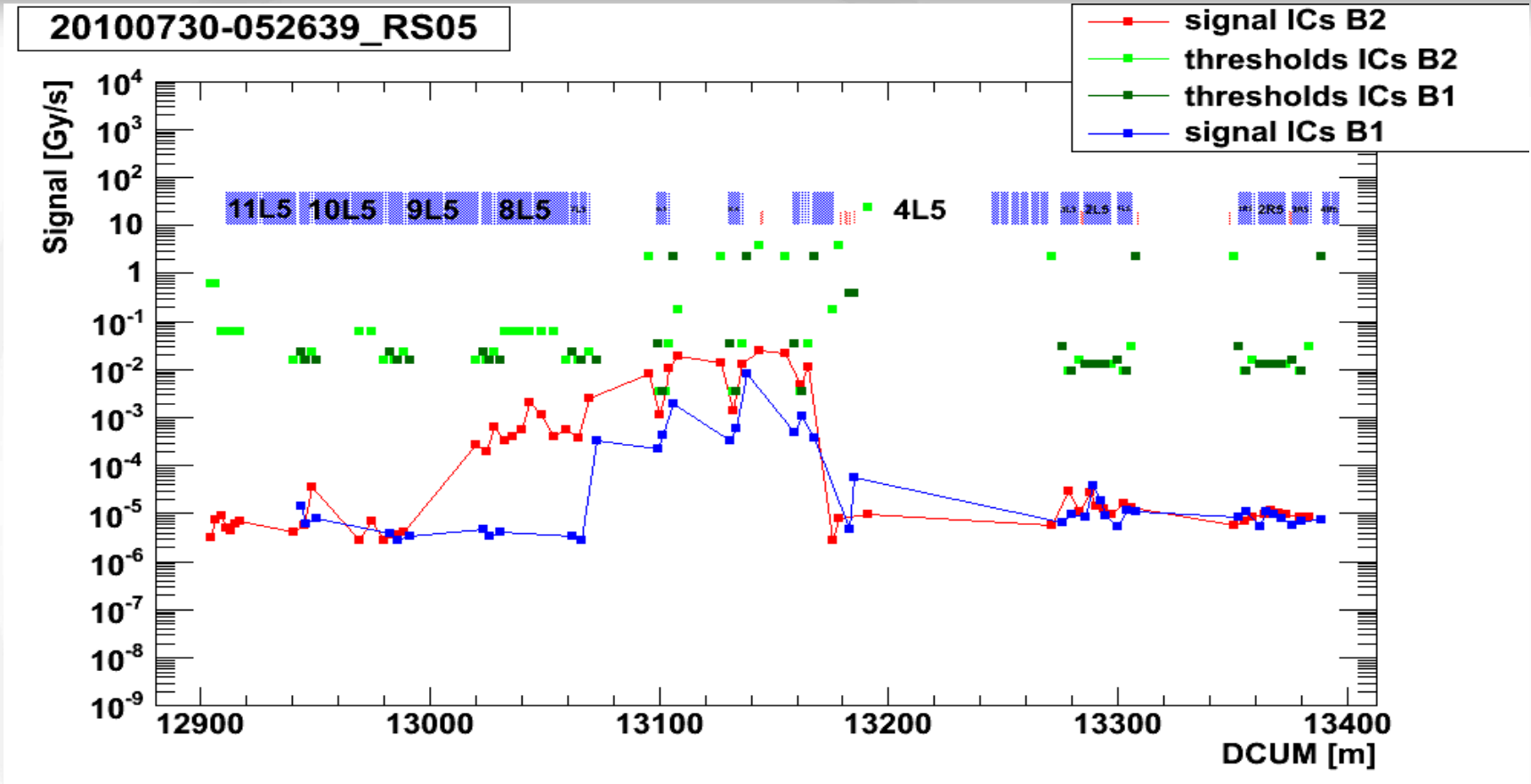


Event 1 on 07-07-2010 @ 20:22:19 :: Last 2 bumps





Loss Map for Event 2 on 30-07-2010 @ 07:26:38



- B2 loss on BLMQI.04L5.B2E20_MQY in RS05 = 2560musec
- Losses seem to start before the quadrupole (either in the interconnect or at the end of the dipole) and continue over several cells (no dipoles in between the quads)
- The middle (monitor 2) is lower than the start and the end location (shielding effect from the magnet)

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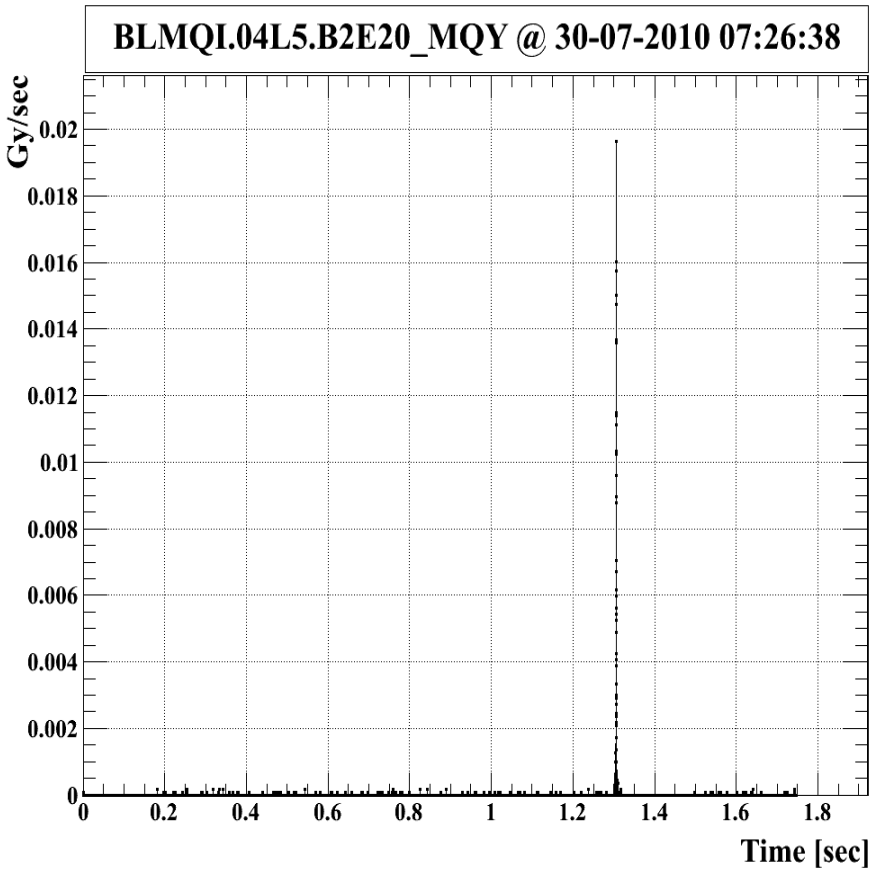
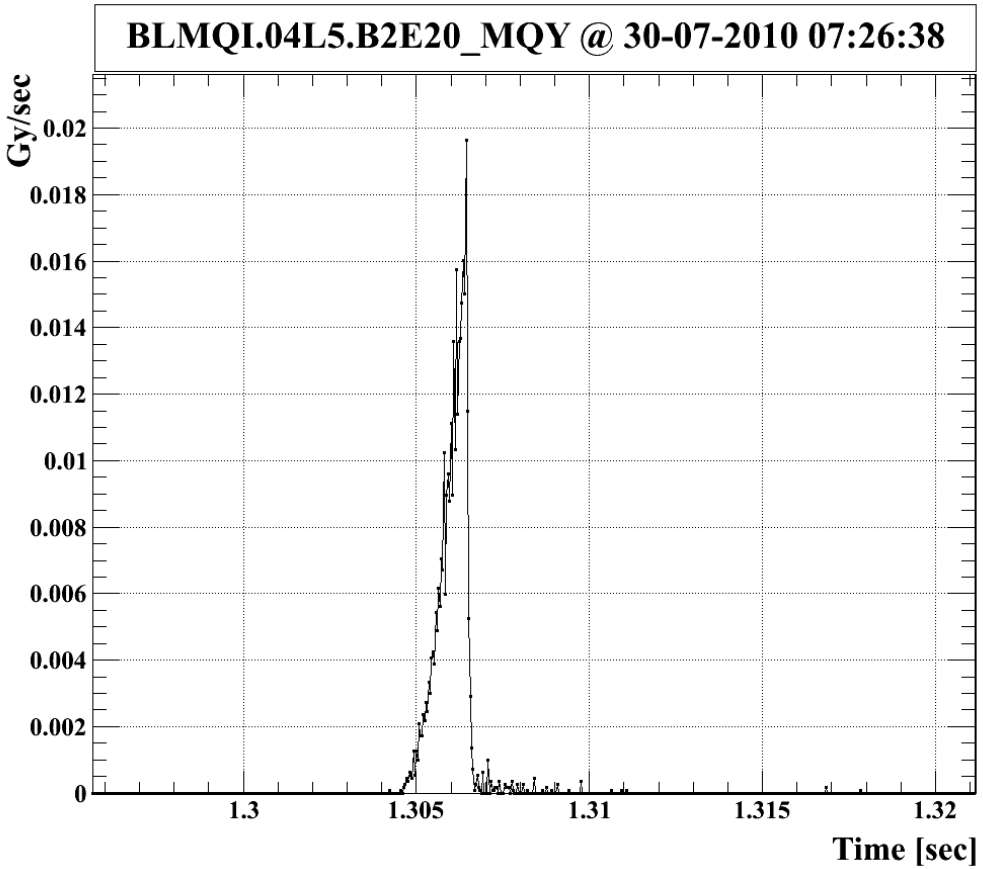
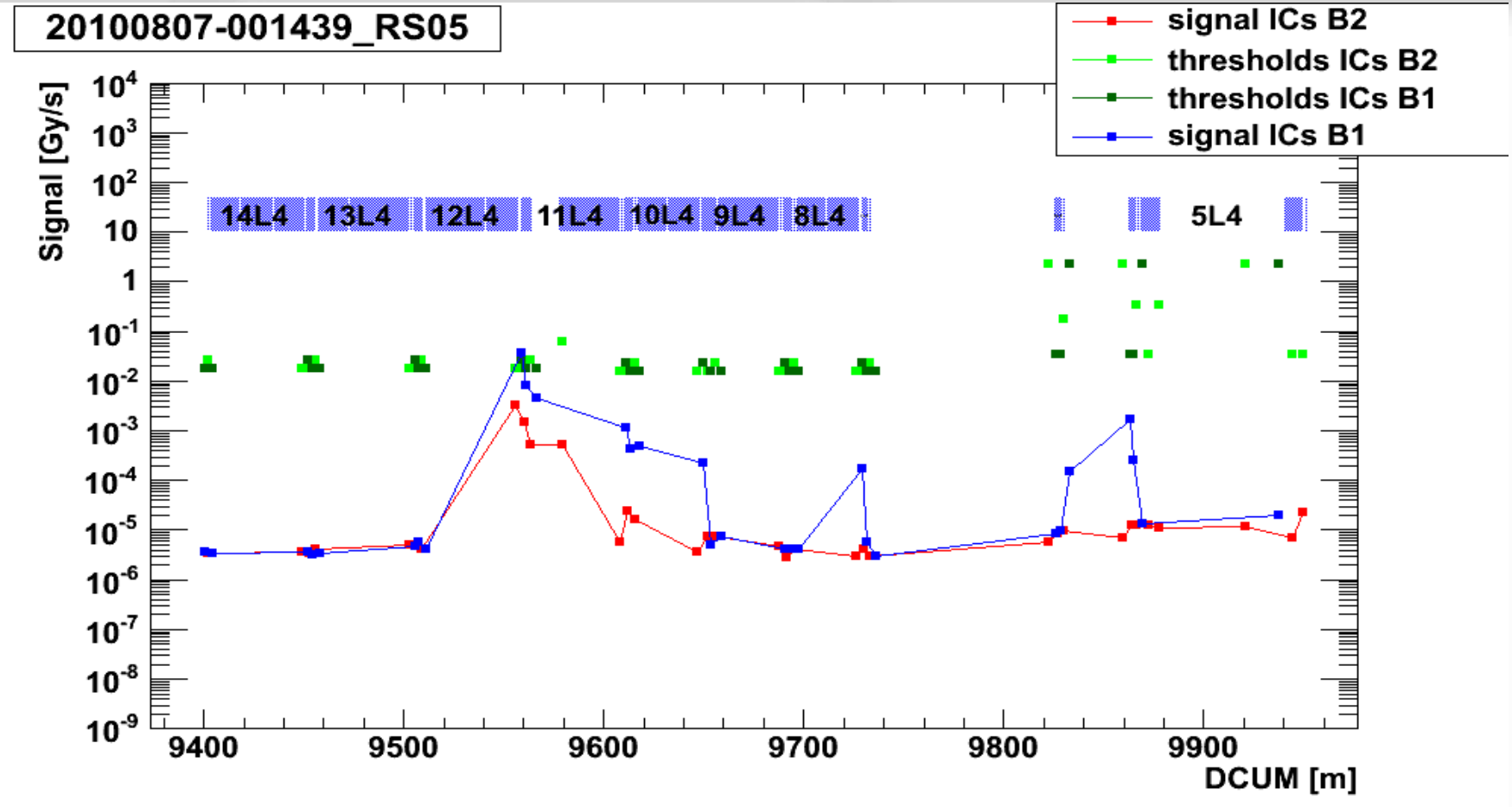
PM Buffer for Event 2 on 30-07-2010 @ 07:26:38





No Losses seen before the beam dump

Loss Map for Event 3 on 07-08-2010 @ 02:14:38



- B1 loss on BLMQI.11L4.B1I10_MQ in RS05 = 2560 musec
- The losses seem to start in the dipole before (monitor in position 3 for B2 is the highest of B2 monitors)

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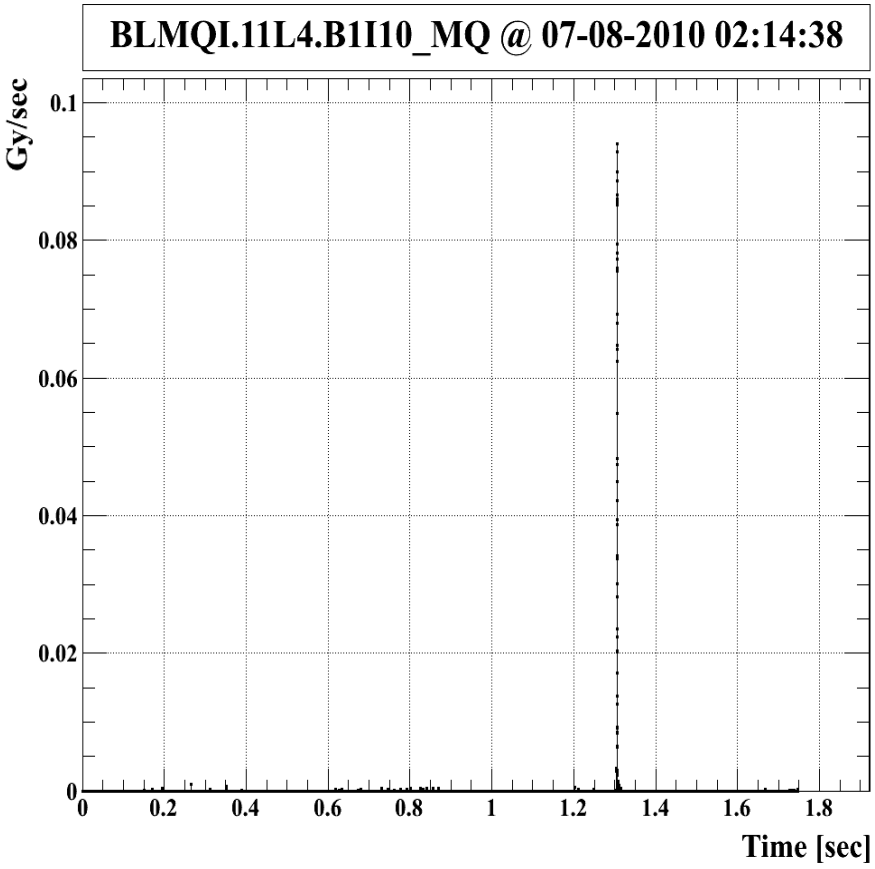
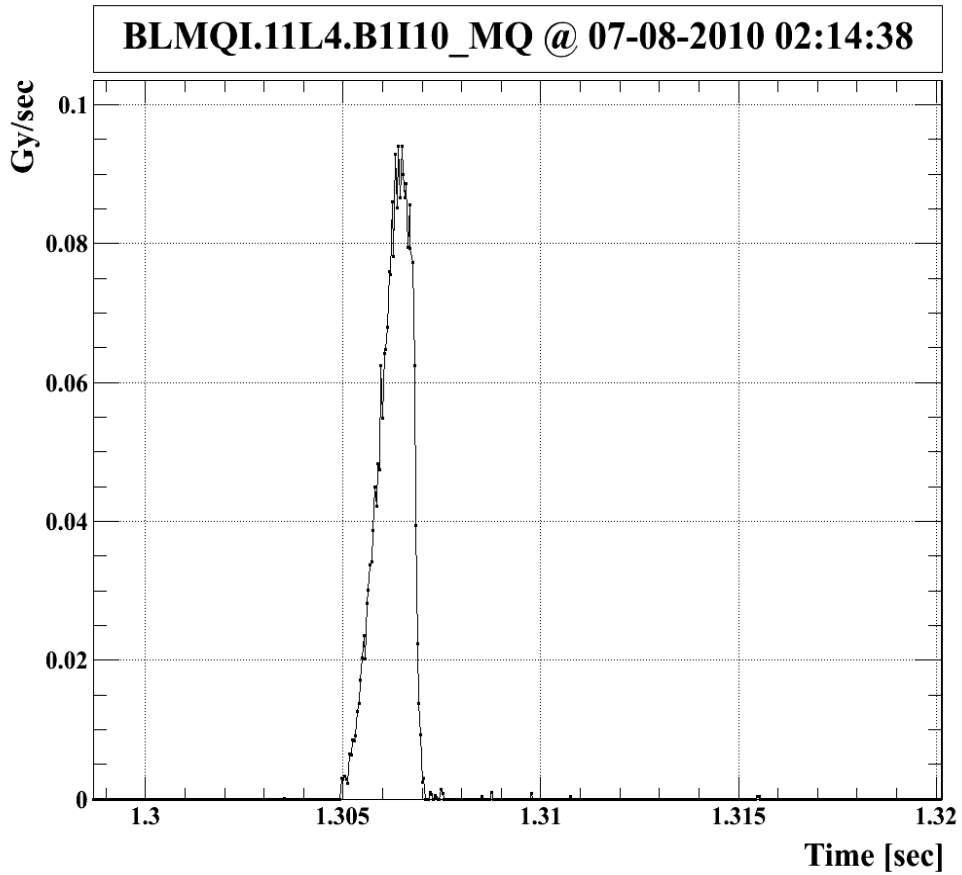
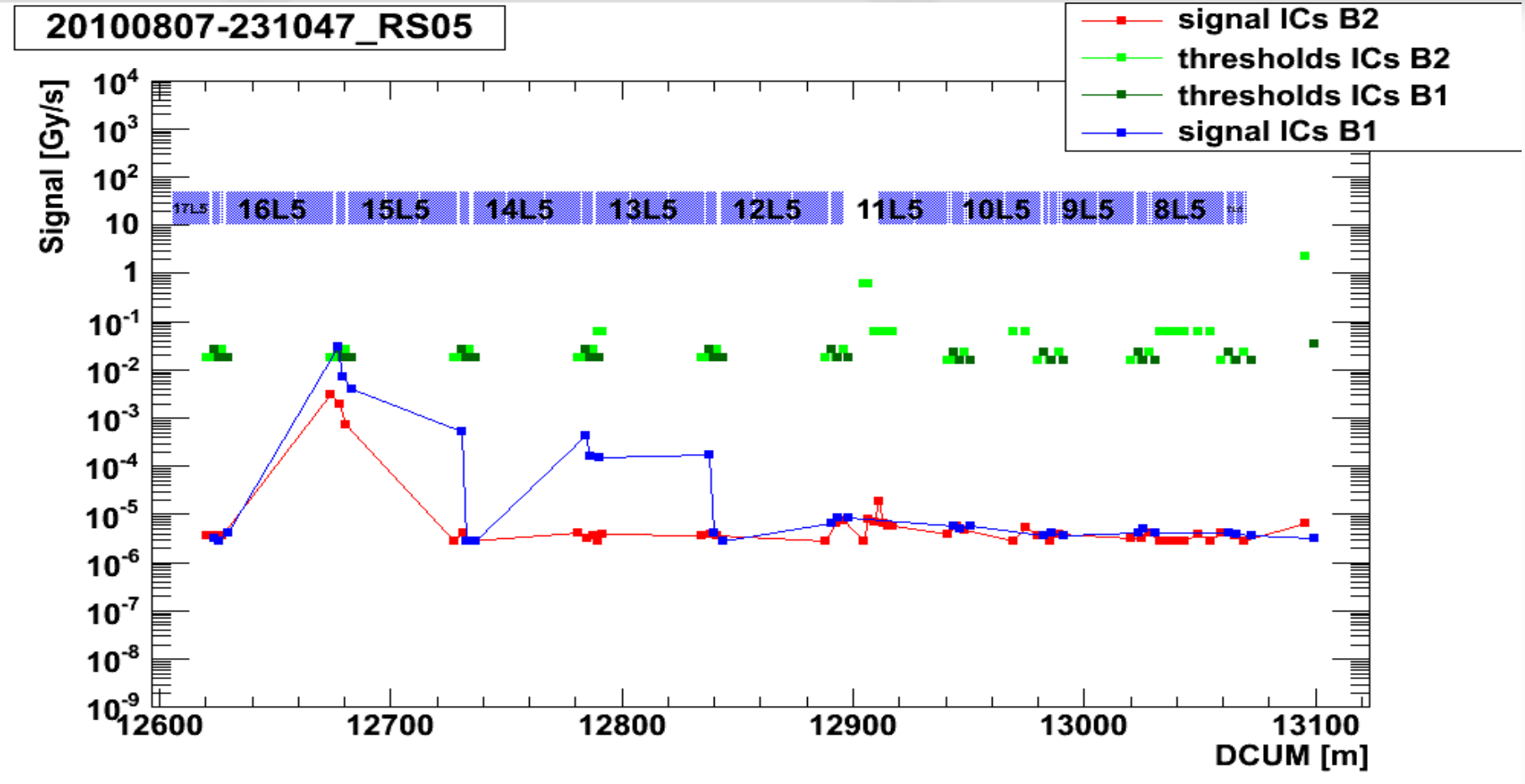
PM Buffer for Event 3 on 07-08-2010 @ 02:14:38





No losses seen before the beam dump

Loss Map for Event 4 on 08-08-2010 @ 01:10:46



- B1 loss on BLMQI.15L5.B1I10_MQ in RS05 = 2560 musec
- The losses seem start in the dipole before (monitor in position 3 for B2 is the highest of B2 monitors)

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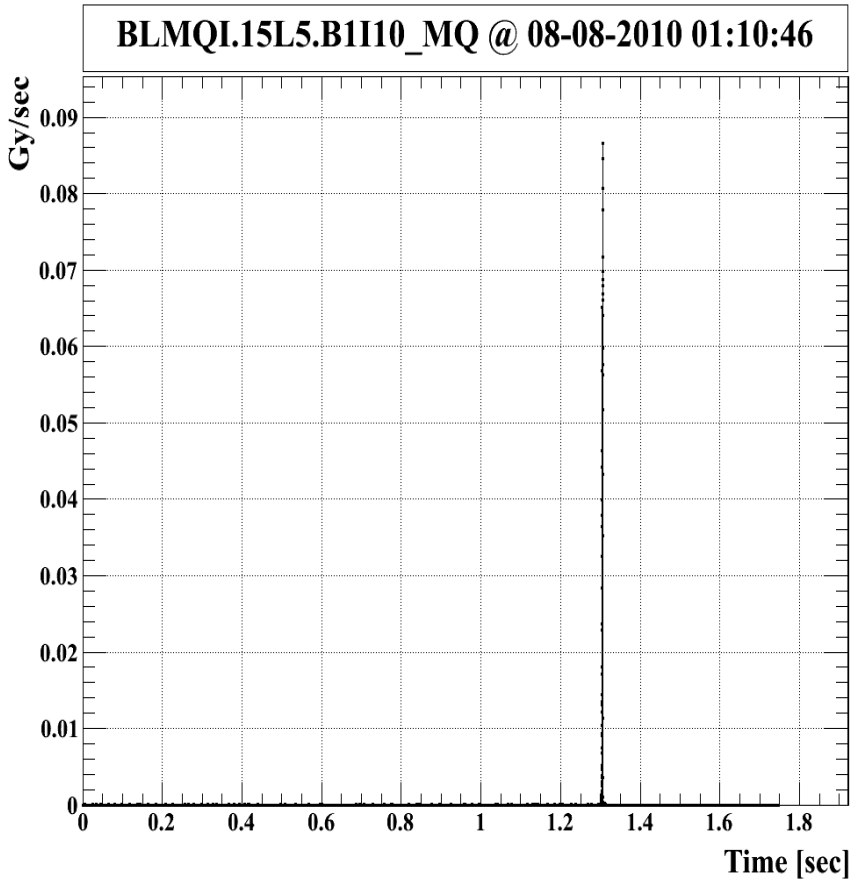
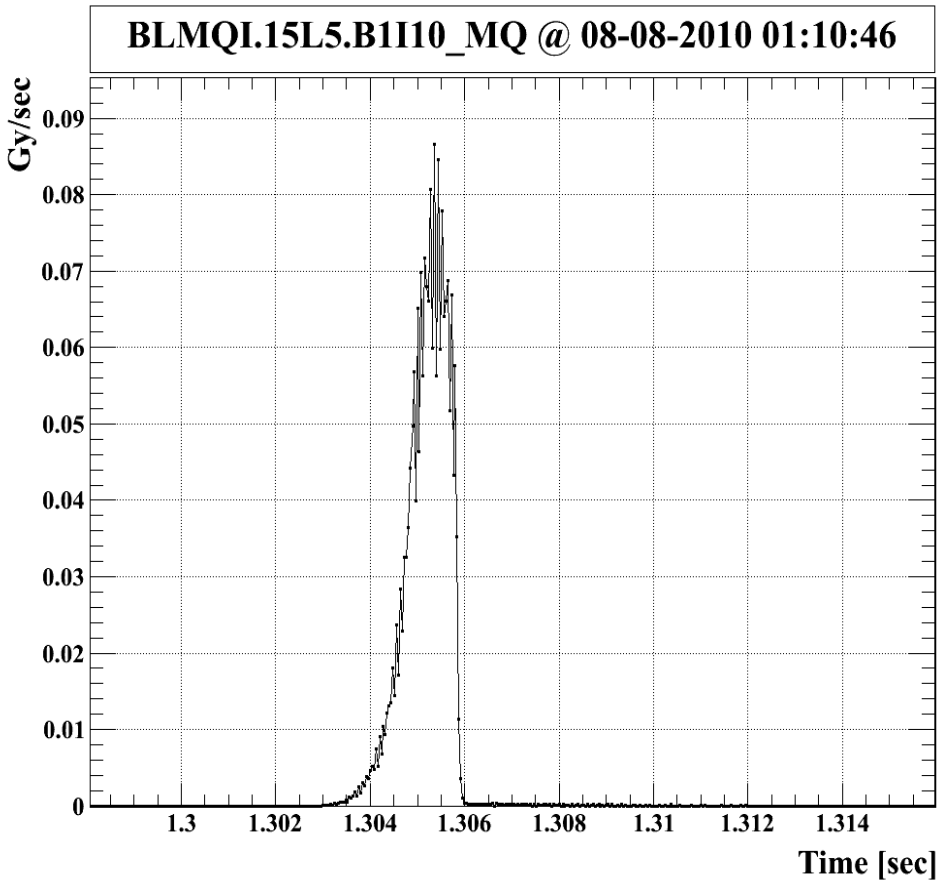
PM Buffer for Event 4 on 08-08-2010 @ 01:10:46

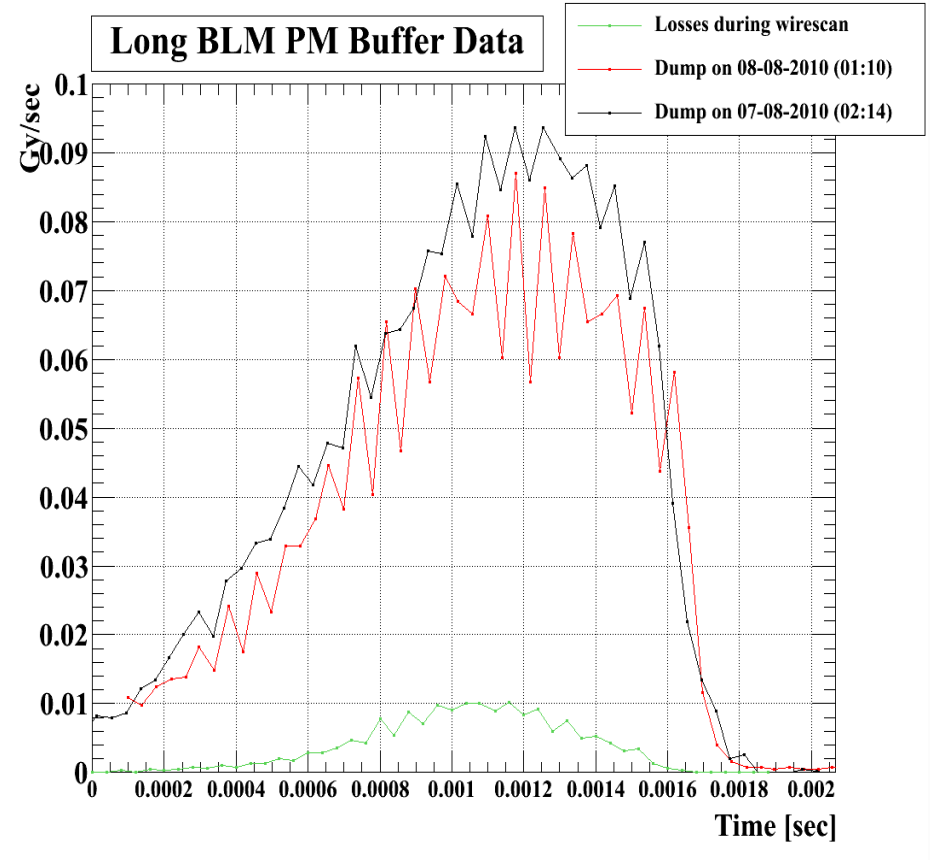




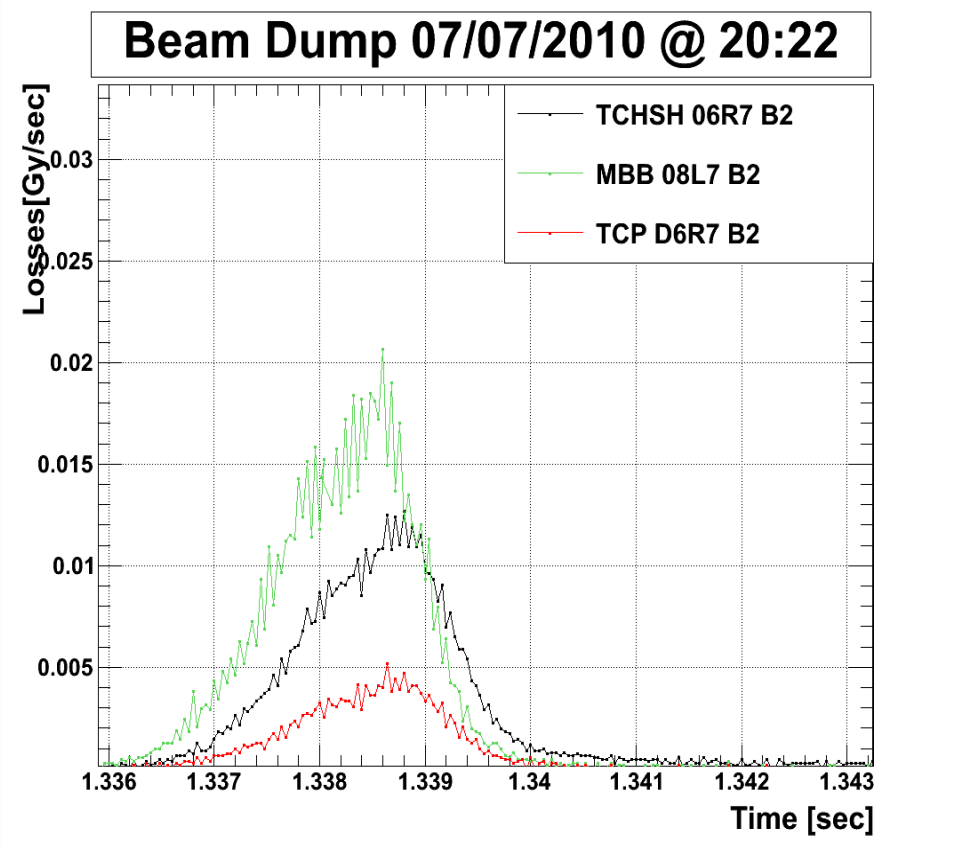
No losses seen before the beam dump

Comparison of Loss Patterns

Comparison between losses from 07-08 and 08-08 with wirescan losses

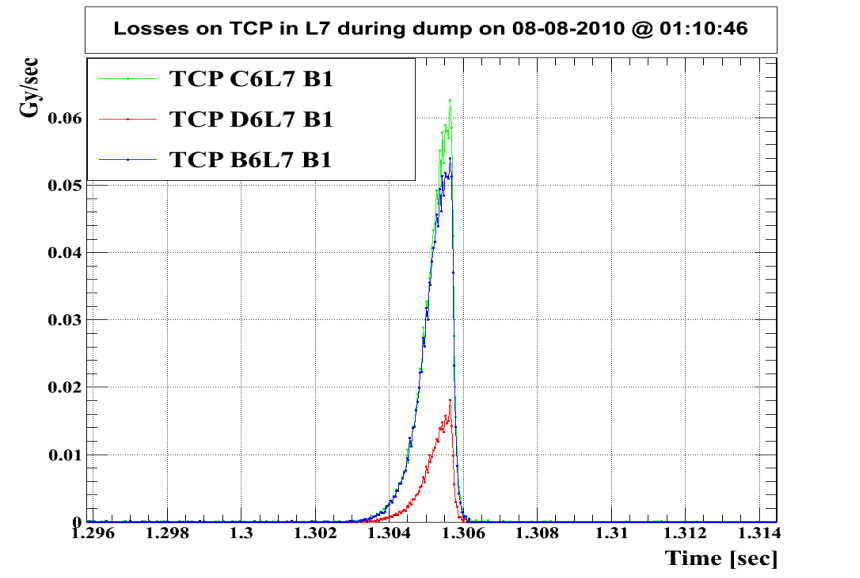


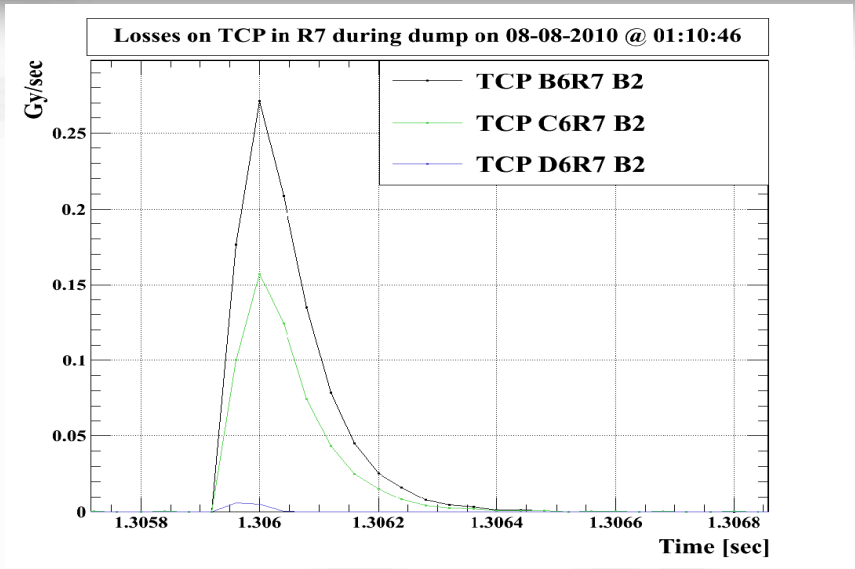
Comparison between losses from 07-07 for different monitors

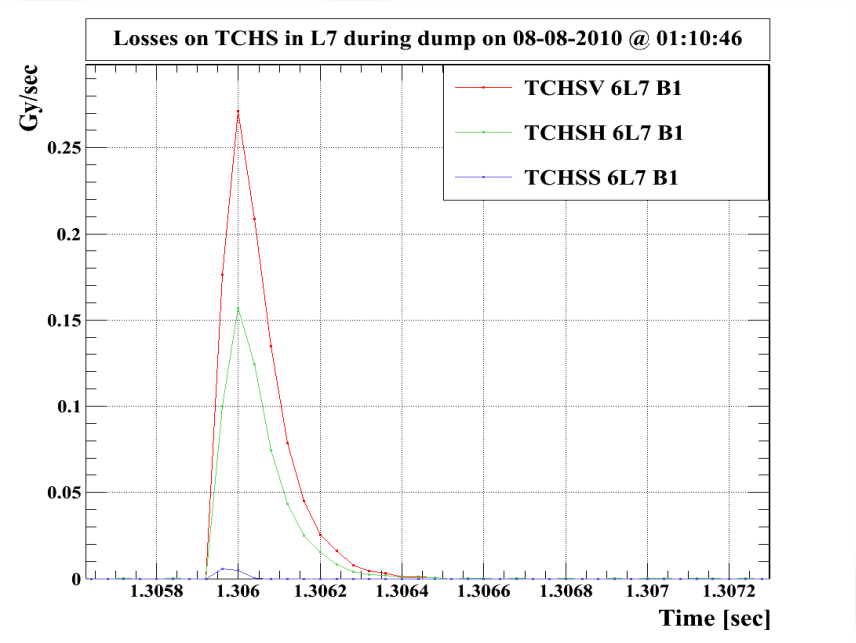


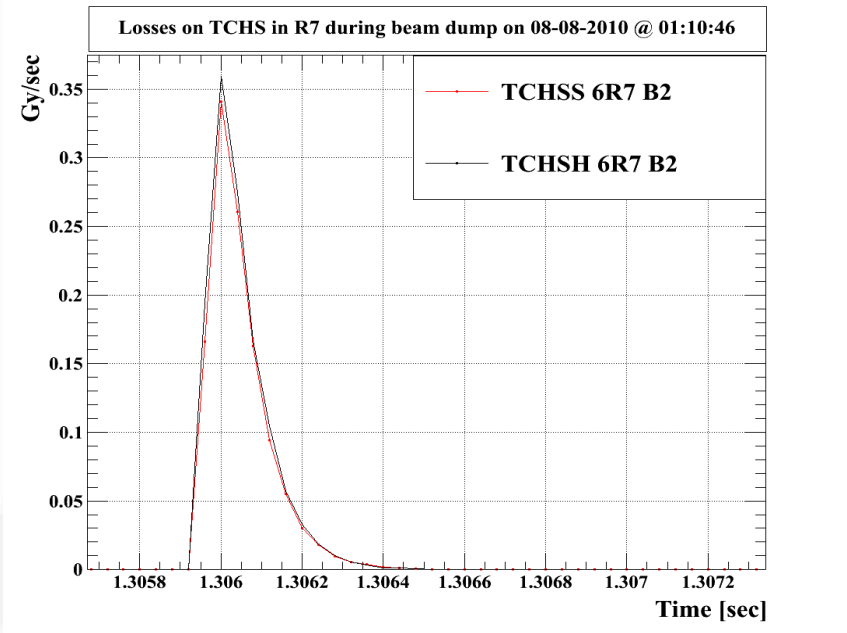
Losses have a rise time of ~1.5ms and last for ~2ms

On-Going: Check Losses on other monitors (i.e.event 4)









Conclusion

Several things were checked so far (BCT,BPM,loss maps, PM data etc)

More detailed analysis is needed and on-going (losses on TCPs, losses around the beam dump monitor, search for similar events etc.)

In case you have some more suggestions what can be investigated, please let us know