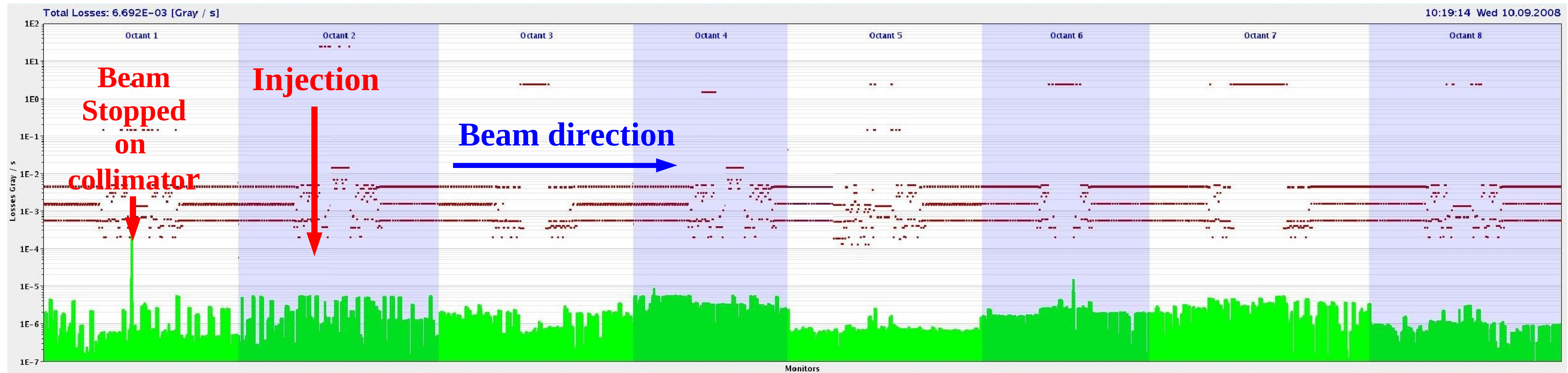


# First Experience with the LHC Beam Loss Monitoring System

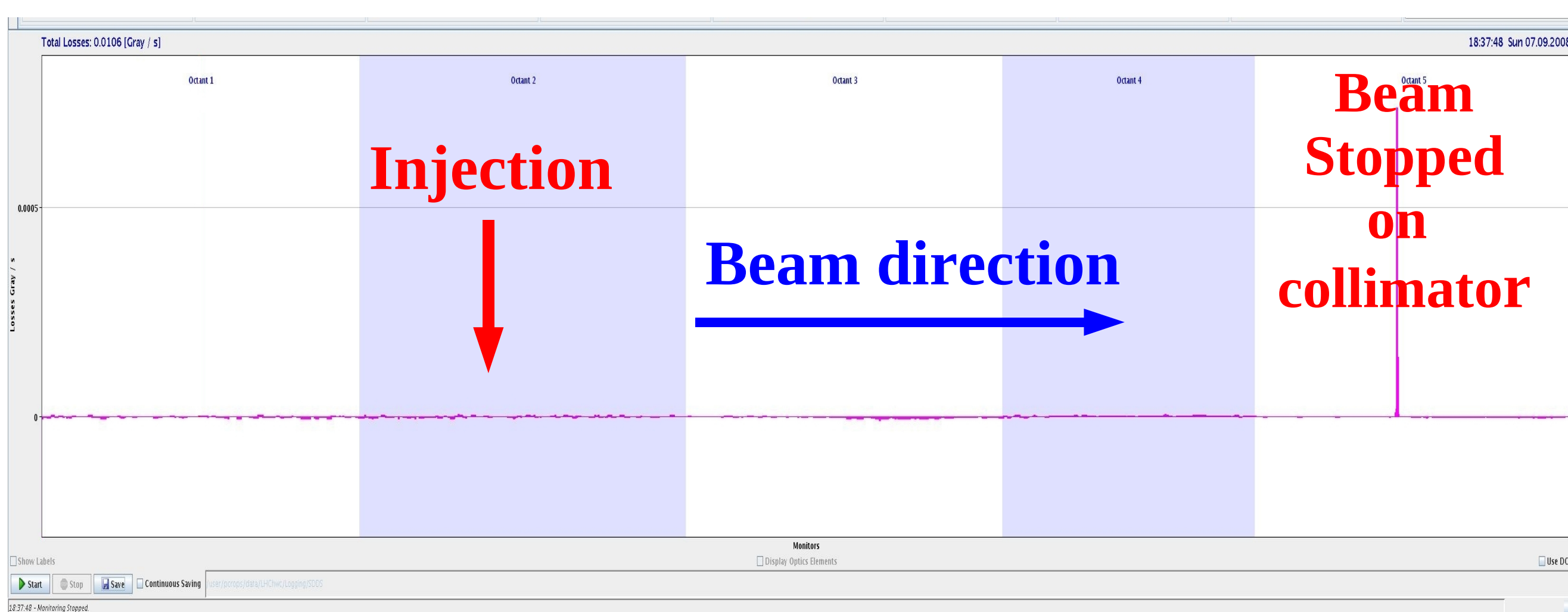
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**Abstract:** The LHC beam loss monitoring system (BLM) consists of about 4000 monitors observing losses at all quadrupole magnets and many other likely loss locations. At the first LHC operation in August and September 2008 all monitors were active and used to observe the losses during the initial beam steerings, at collimators, at the LHC dump and during aperture scans. The different acquisition modes and their presentation are shown. Aperture scan loss patterns and a detailed loss pattern leading to a magnet quench are discussed. The observed signals of the BLM system are analyzed in terms of response time, sensitivity and noise performance.

## Monitors and Thresholds

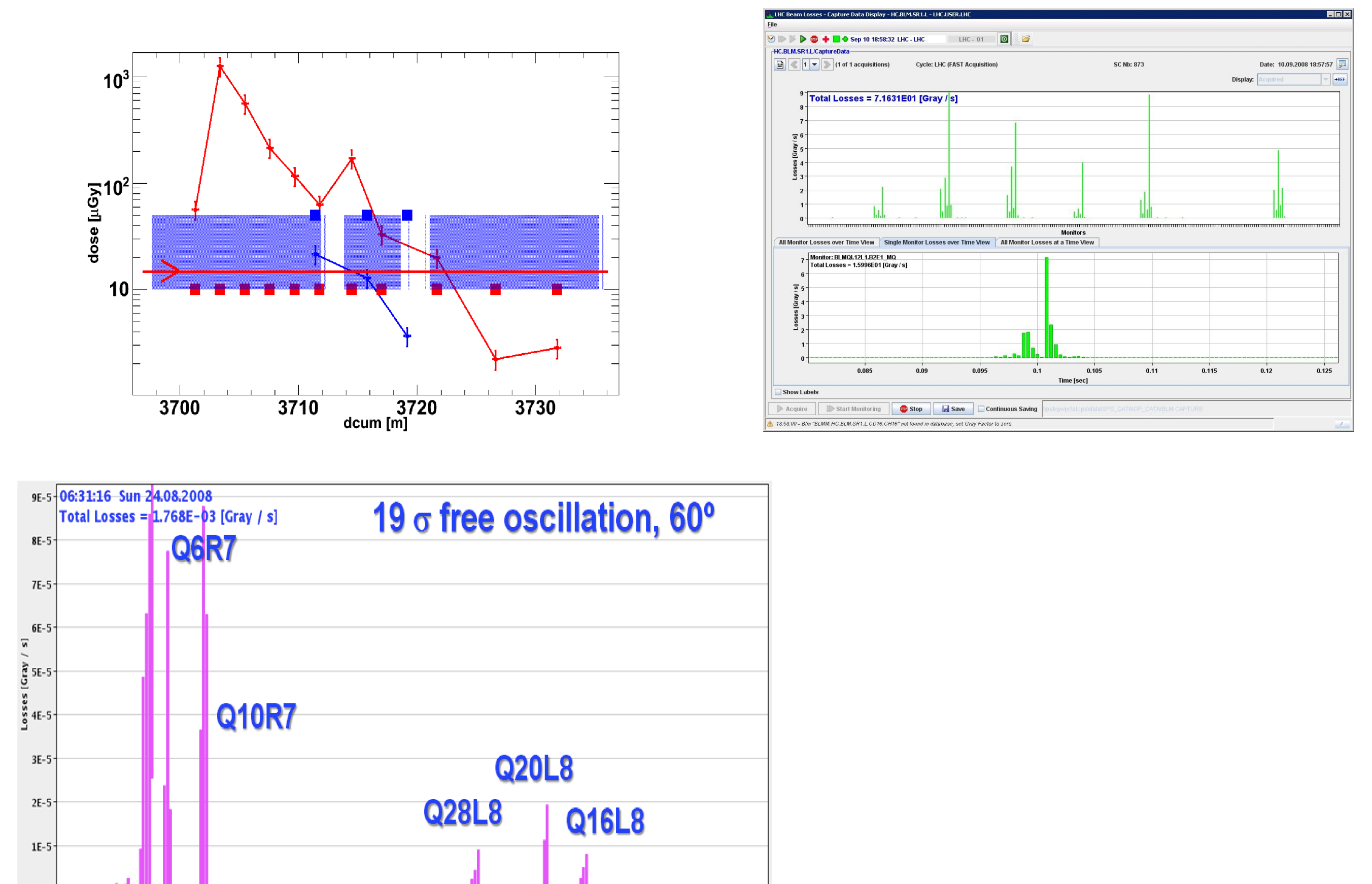


## Relative Measurements

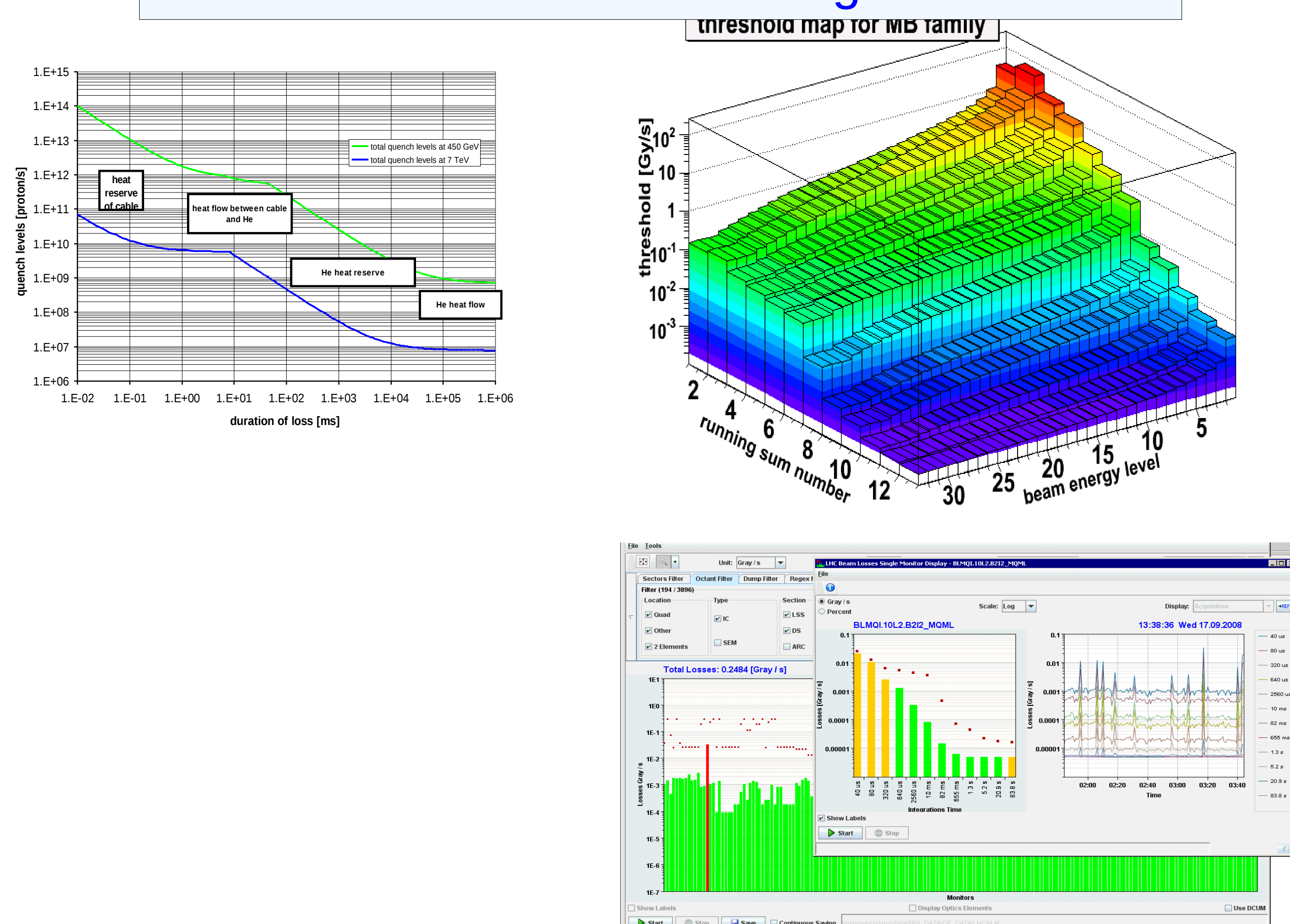


- BLMs located outside of the cryostat at the plane of the vacuum chambers
- Two detectors are on the quadrupole magnets (white) and one on the adjacent bending magnet (blue).

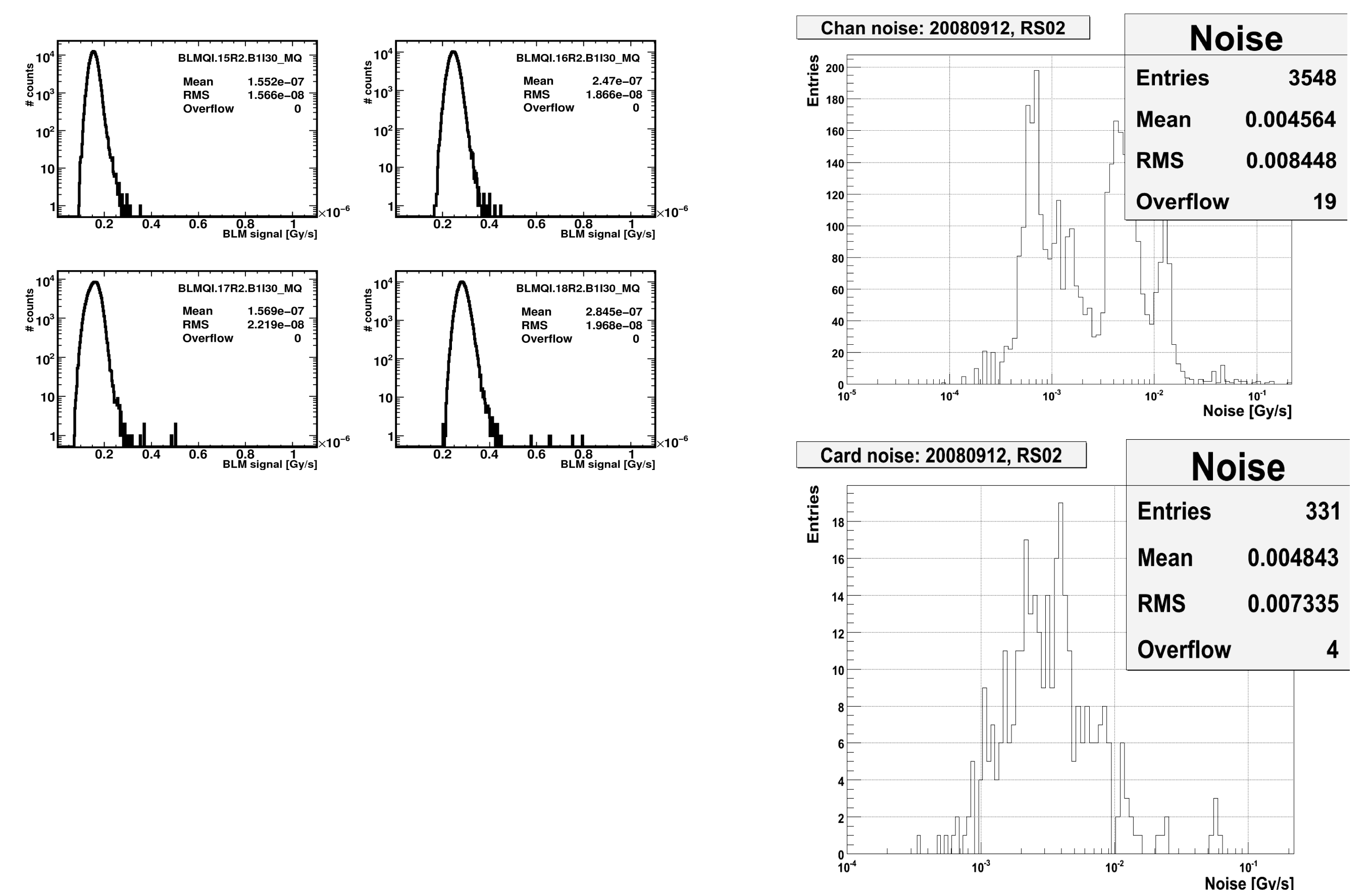
## First Quench – Beam Induced



## Threshold Settings



## Acquisition Chain Signals



## Conclusion

- Observation of losses during the first injection studies and aperture scans
- Sensitivity to measure losses lower than 1 % of the pilot bunch intensity of  $2 \cdot 10^9$
- Observed loss patterns are as expected
- No mayor faulty signals are introduced in the BLM acquisition chains (the number of false beam permit signal inhibits are expected to be low)