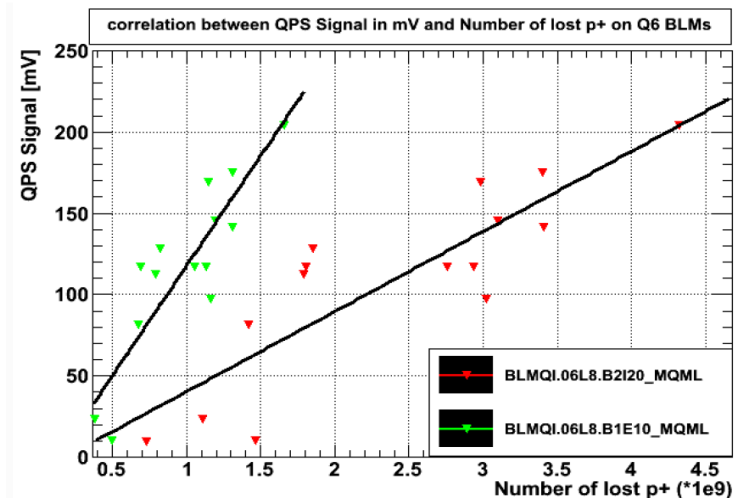
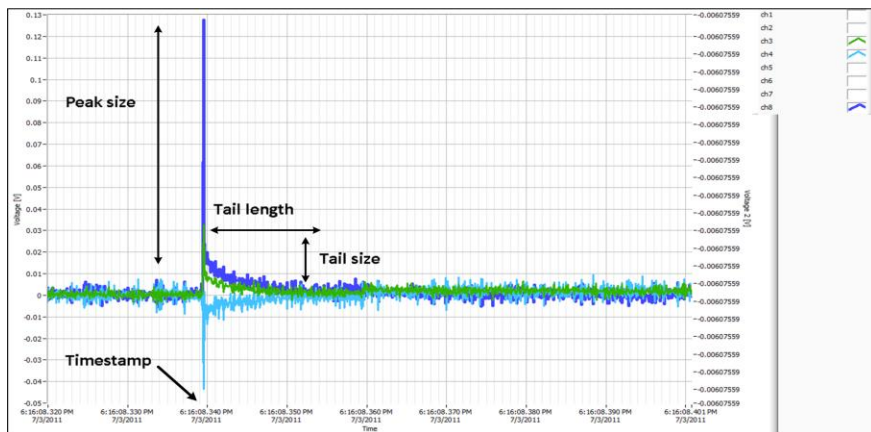


Quench Margin at Injection

ABT/BTP, OP, Collimation, BLM, QPS teams

Results from last MD

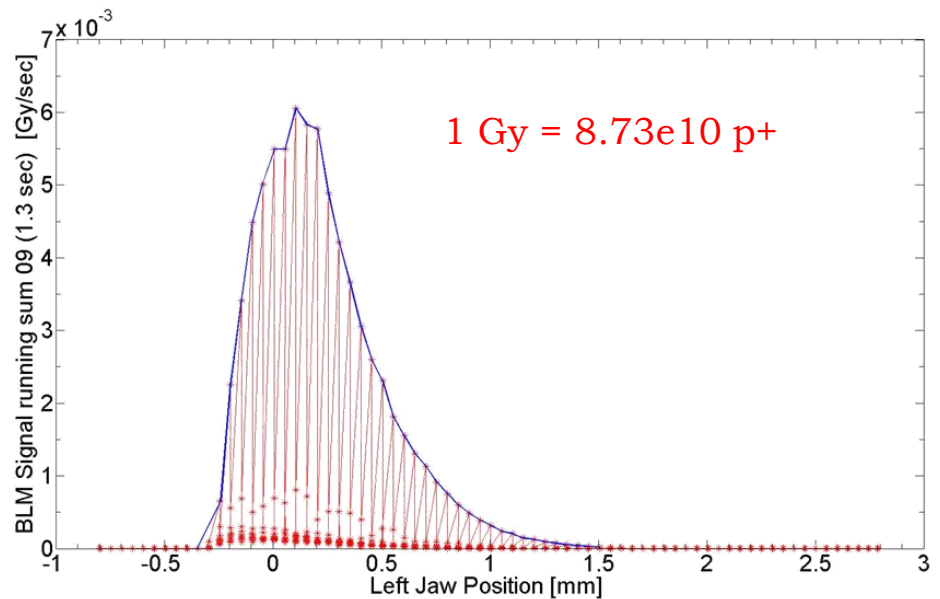
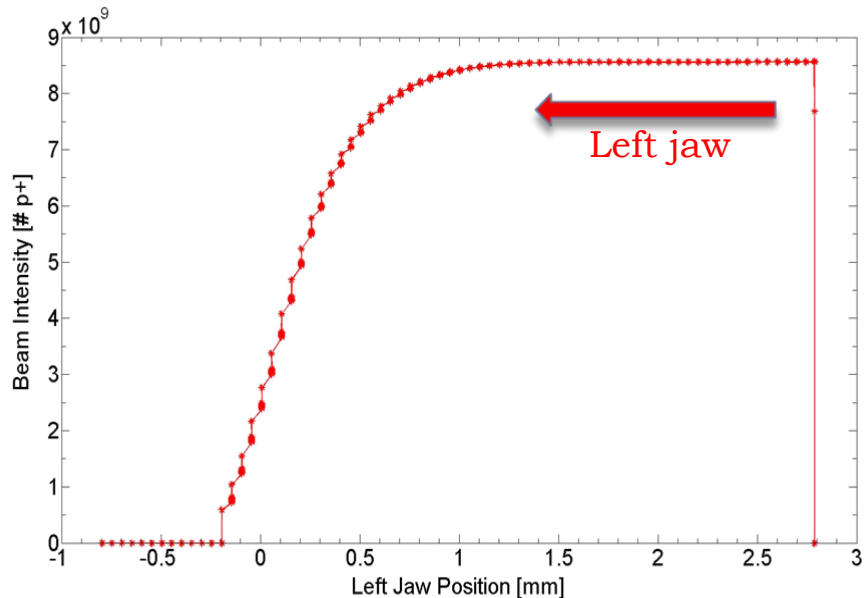
- Injecting pilot bunch with increasing intensity ($1-32 \times 10^{10}$ p+) on the TCLIB
- Monitoring losses at TCLIB and downstream magnets (MQ6.L8, MQ7.L8)
- Monitoring QPS at MQ6.L8



- We saw a signal at the QPS
- Signal was increasing with beam intensity: beginning of a **quench/quenchino?**
- BLM at Q6 above quench threshold ($\times 3$ dump thresholds)
- BLM in saturation for all intensities \rightarrow need **calibration**

TCLIB BLM Calibration

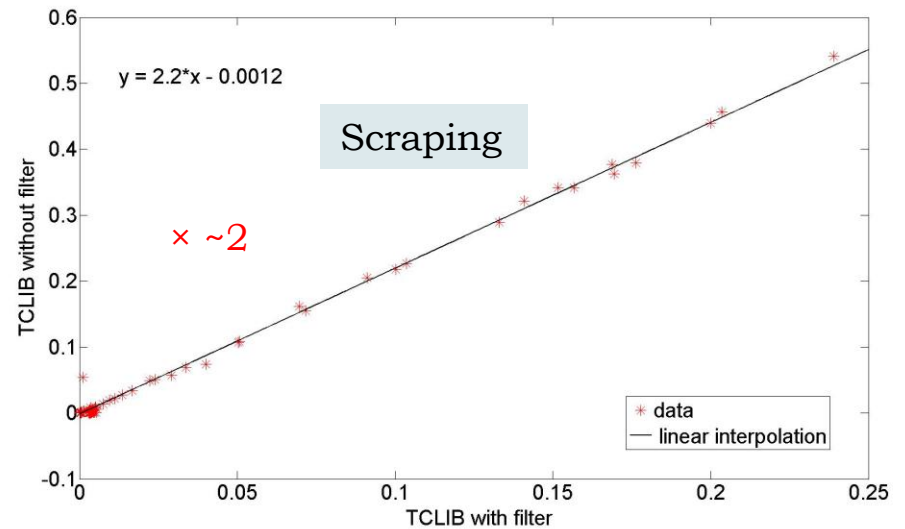
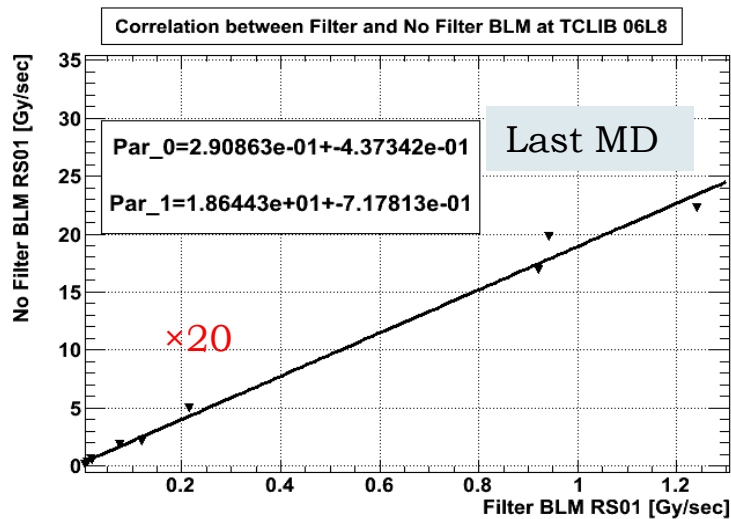
- ▶ Slow full beam scraping: 50 μm steps every 10 s (90 steps in total) with a pilot bunch ($\sim 9 \times 10^9$ p+).



Input for FLUKA studies (normalization factor)

Other Observations

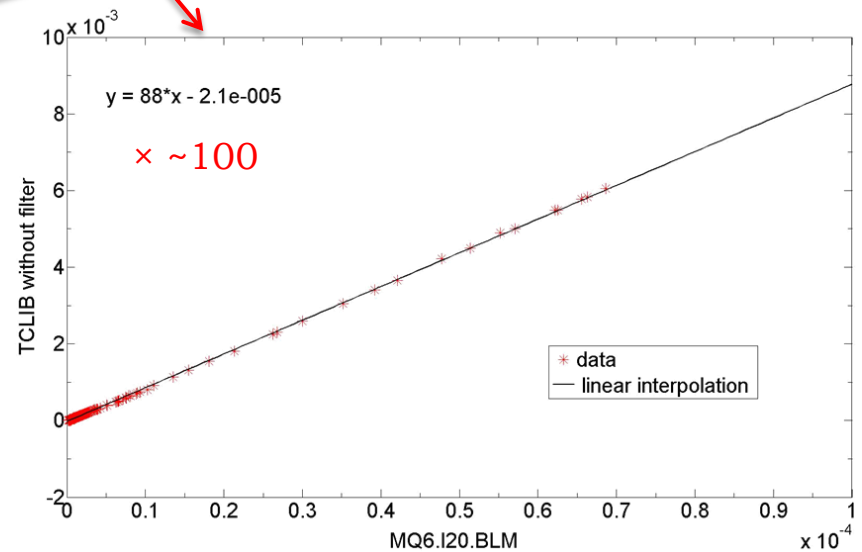
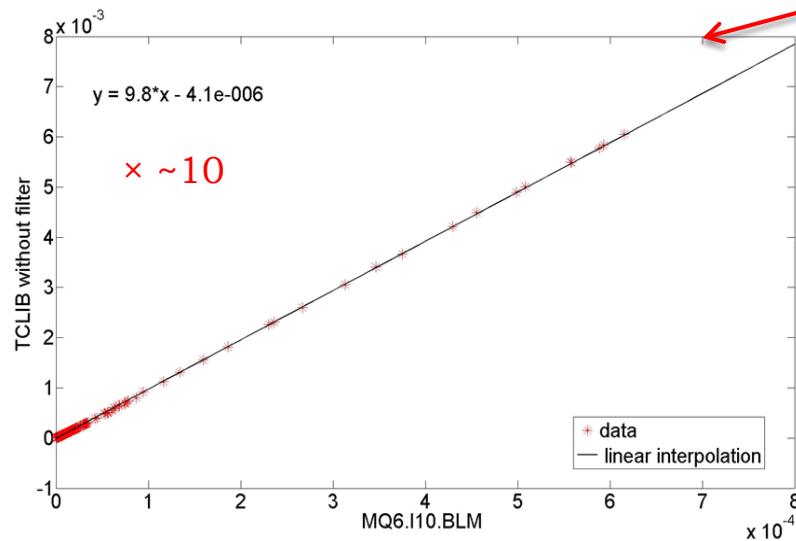
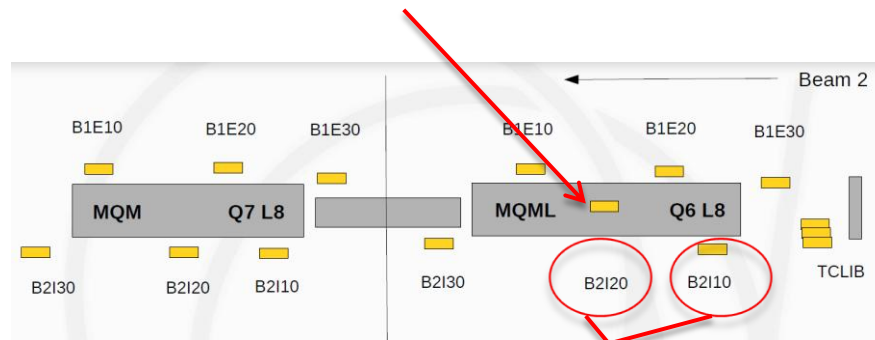
- At TCLIB a BLM monitor with RC filter has been installed. A factor 180 lower signal was expected at the filtered monitor (running sum 01: 40 μ s) but:



To be investigated !!!

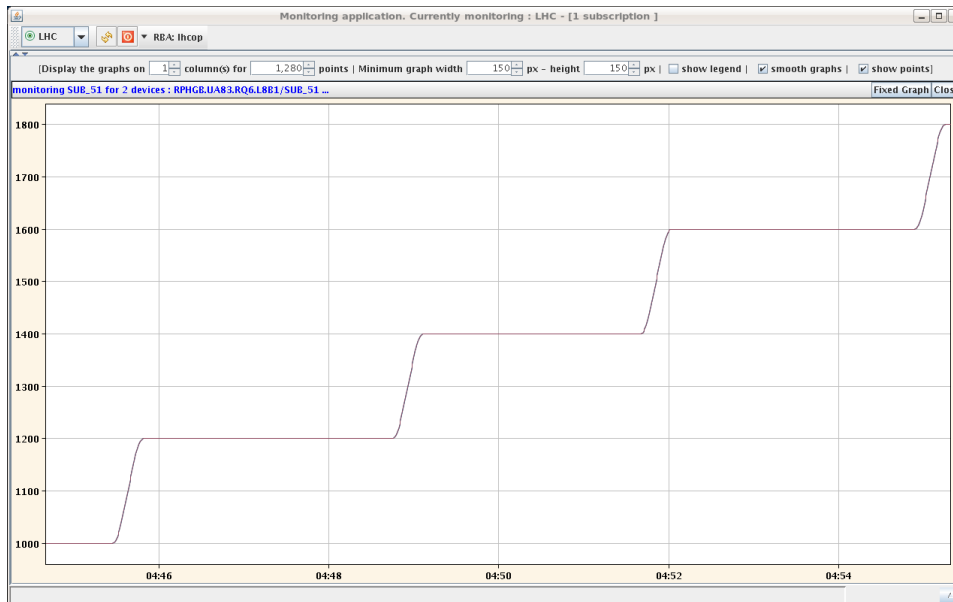
Other Observations

- Estimated leakage from TCLIB to MQ6 (last MD data analysis, reconstruction from B2 BLM due to saturation): 10-20%



New MD: Increase MQ6 Current

- ▶ Closed TCLIB collimator to 1 mm gap and -3 sigma offset
- ▶ Beam 2 inject and dump, pilot bunch of $3e10$ p+
- ▶ BLM monitors at TCLIB and Q6 in saturation ($> 1000\%$ ratio to dump)
- ▶ We increased the current of Q6.L8 magnet in steps of 200 A until 2200 A (5 TeV operation) and recorded QPS signal
- ▶ QPS didn't show any significant variation when increasing the beam current ==> NO QUENCH or QUENCHINO recorded.



Data analysis will follow but up to now it looks like the signal was just induced by showers on the electronics (TCLIB intercepts the full beam ==> too diluted energy deposition at Q6 to cause a quench).

- **Higher BLM thresholds?**
- **TCLIB back to nominal aperture (6.8σ , now 8.3σ) ?**

Need results from FLUKA simulations