

BLM Data from the Collimator tests in SPS and TT40

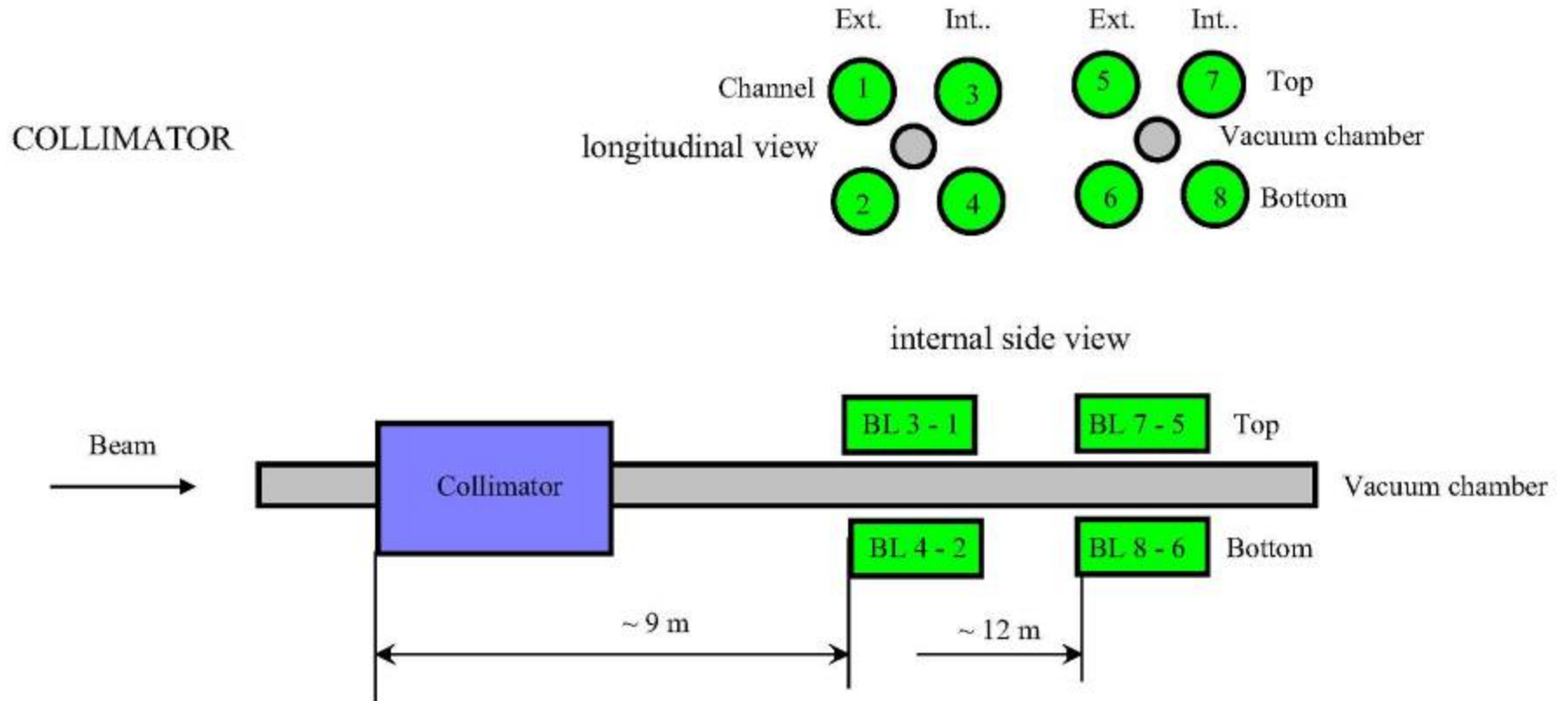
B. Dehning, F. Ferioli, E.B. Holzer, L. Jensen,
L. Ponce and the Collimator Team

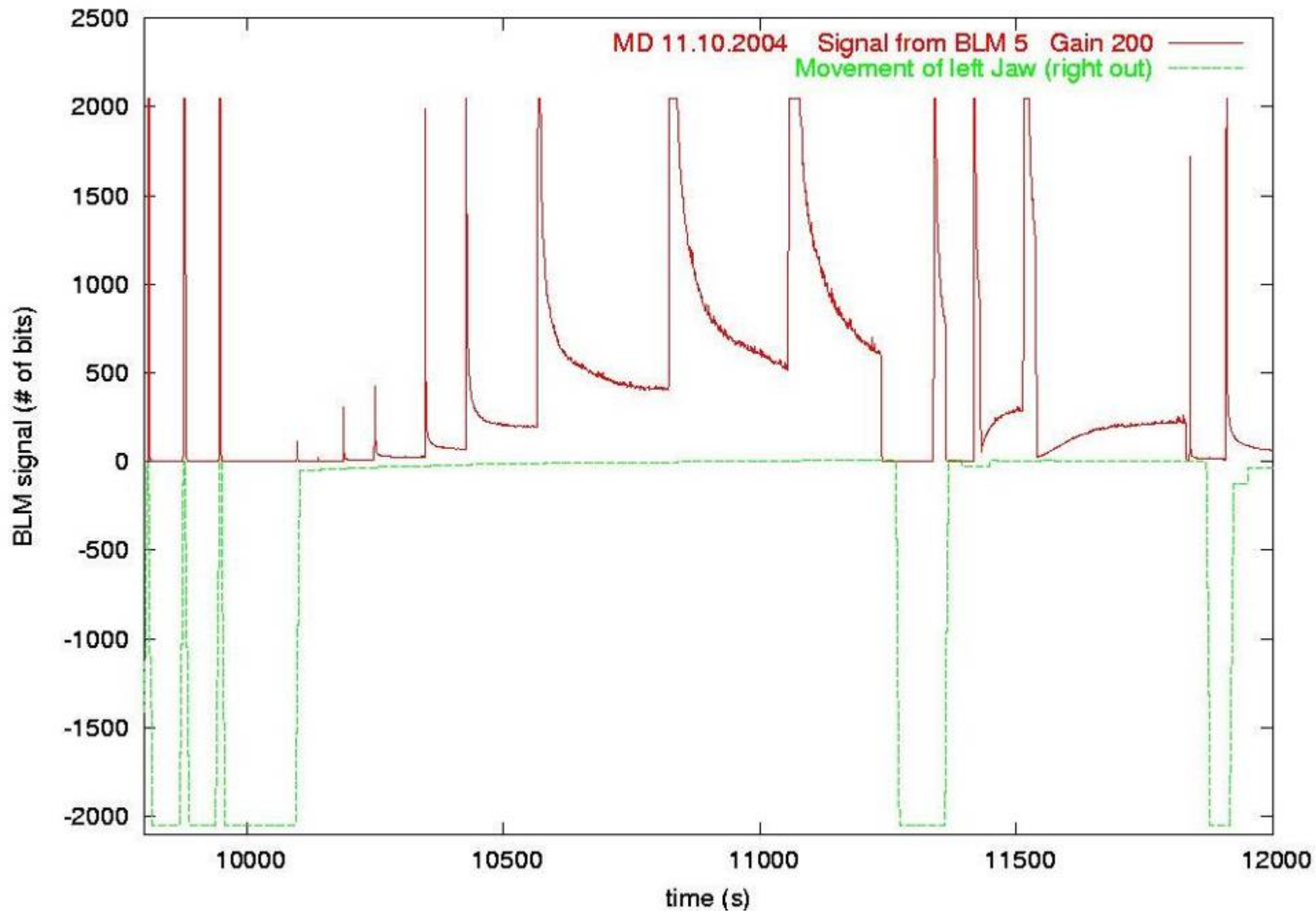
26.11.2004

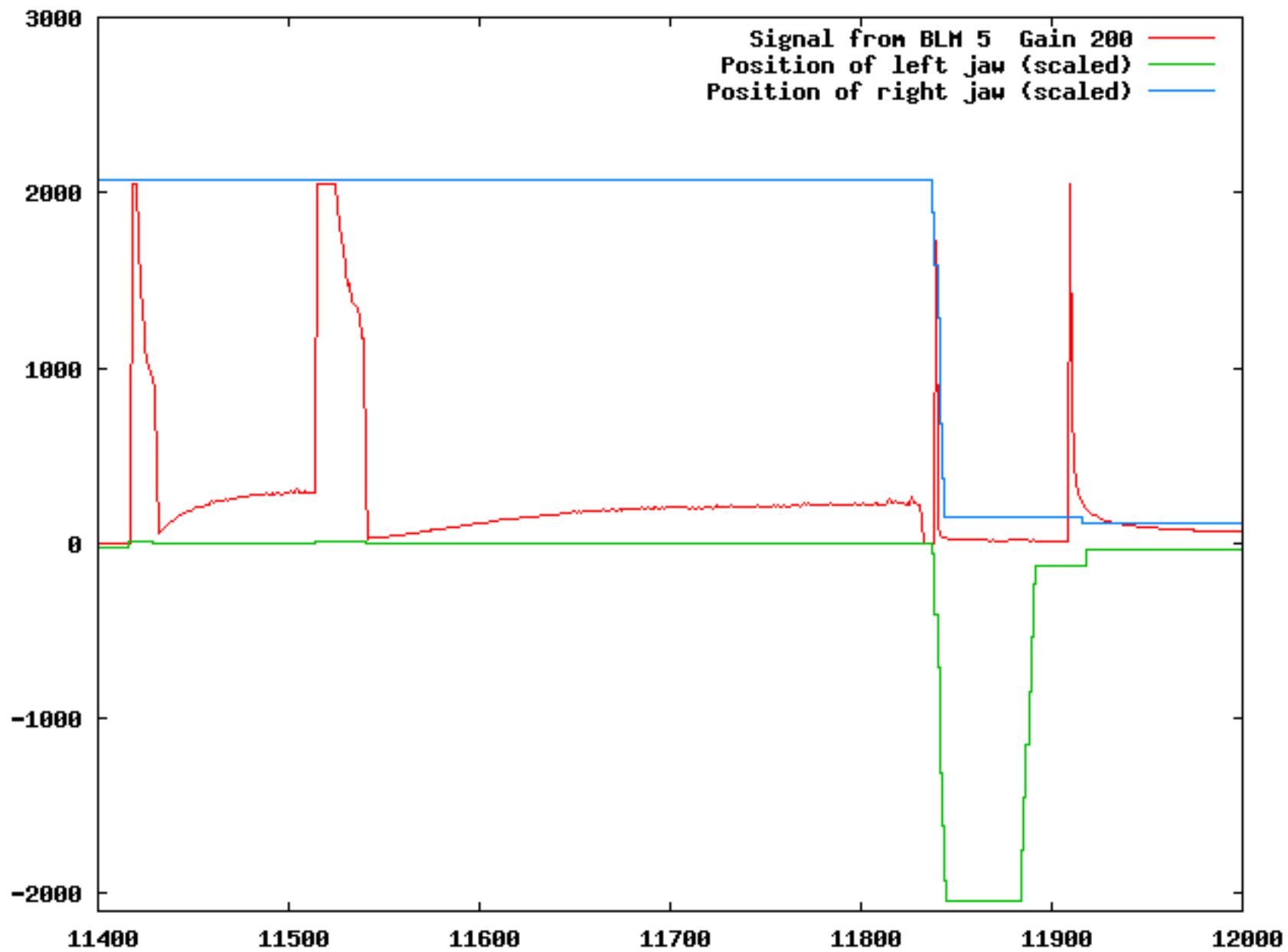
Collimation WG Meeting, CERN

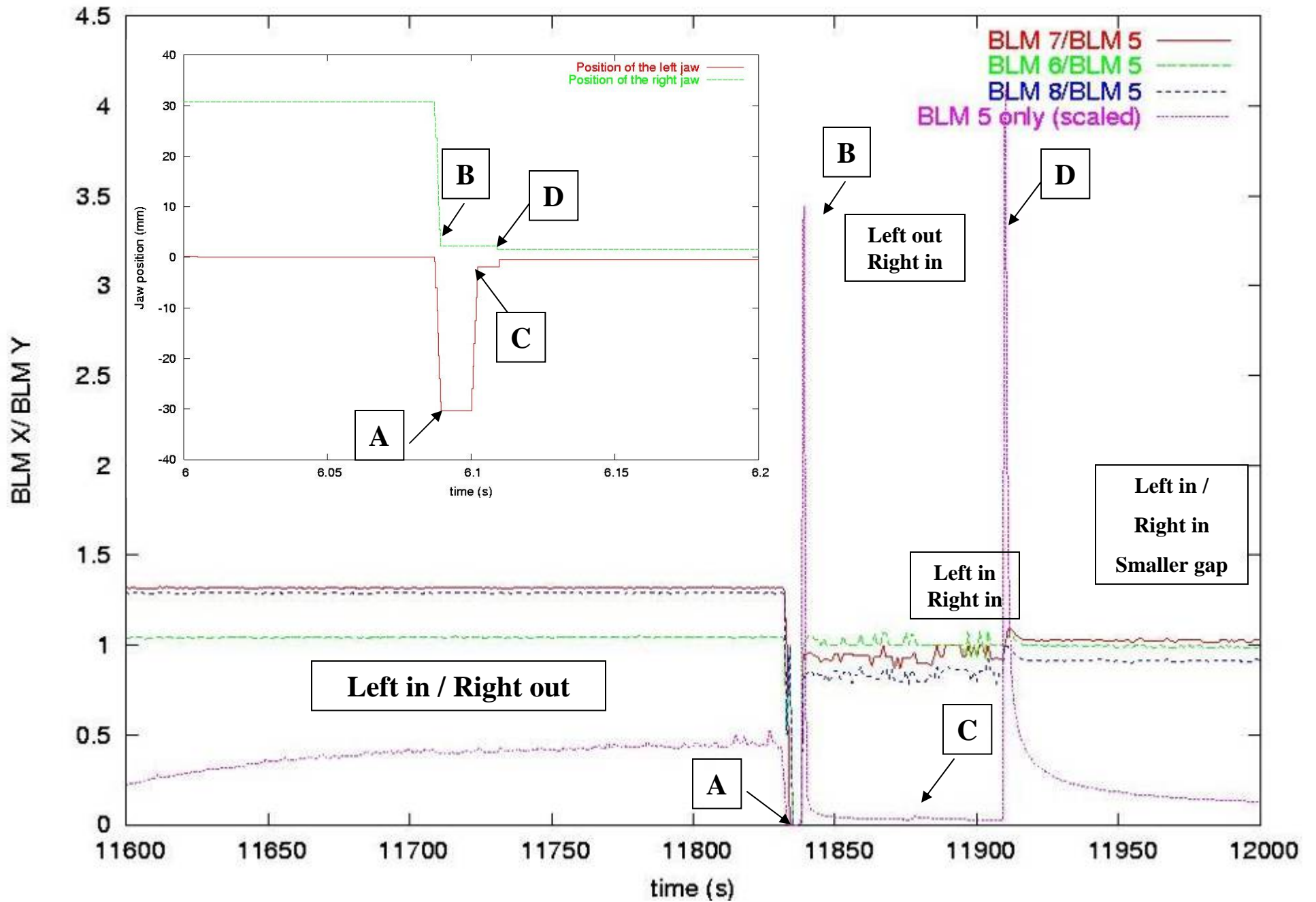
SPS BA5

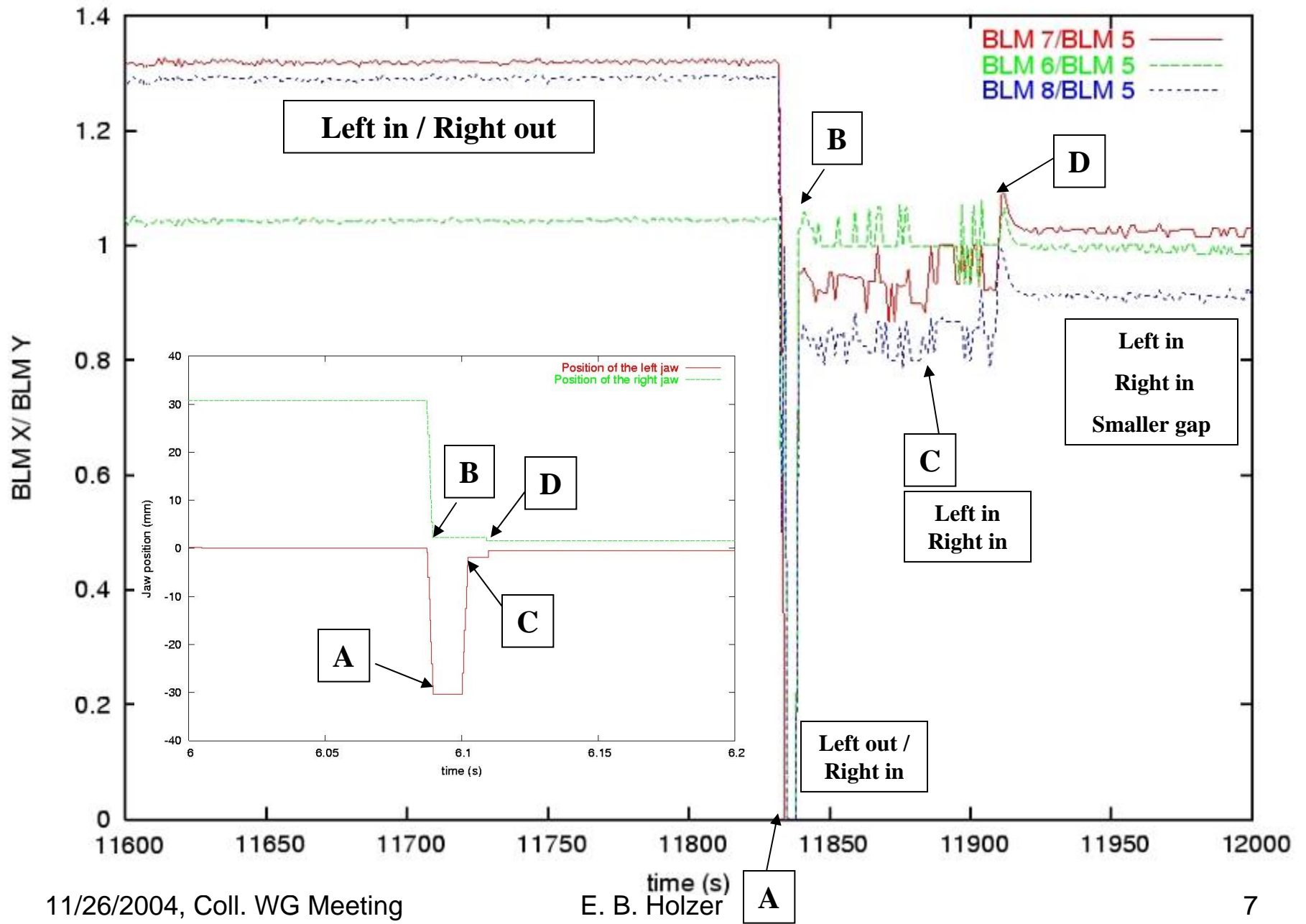
8 Ionization Chambers

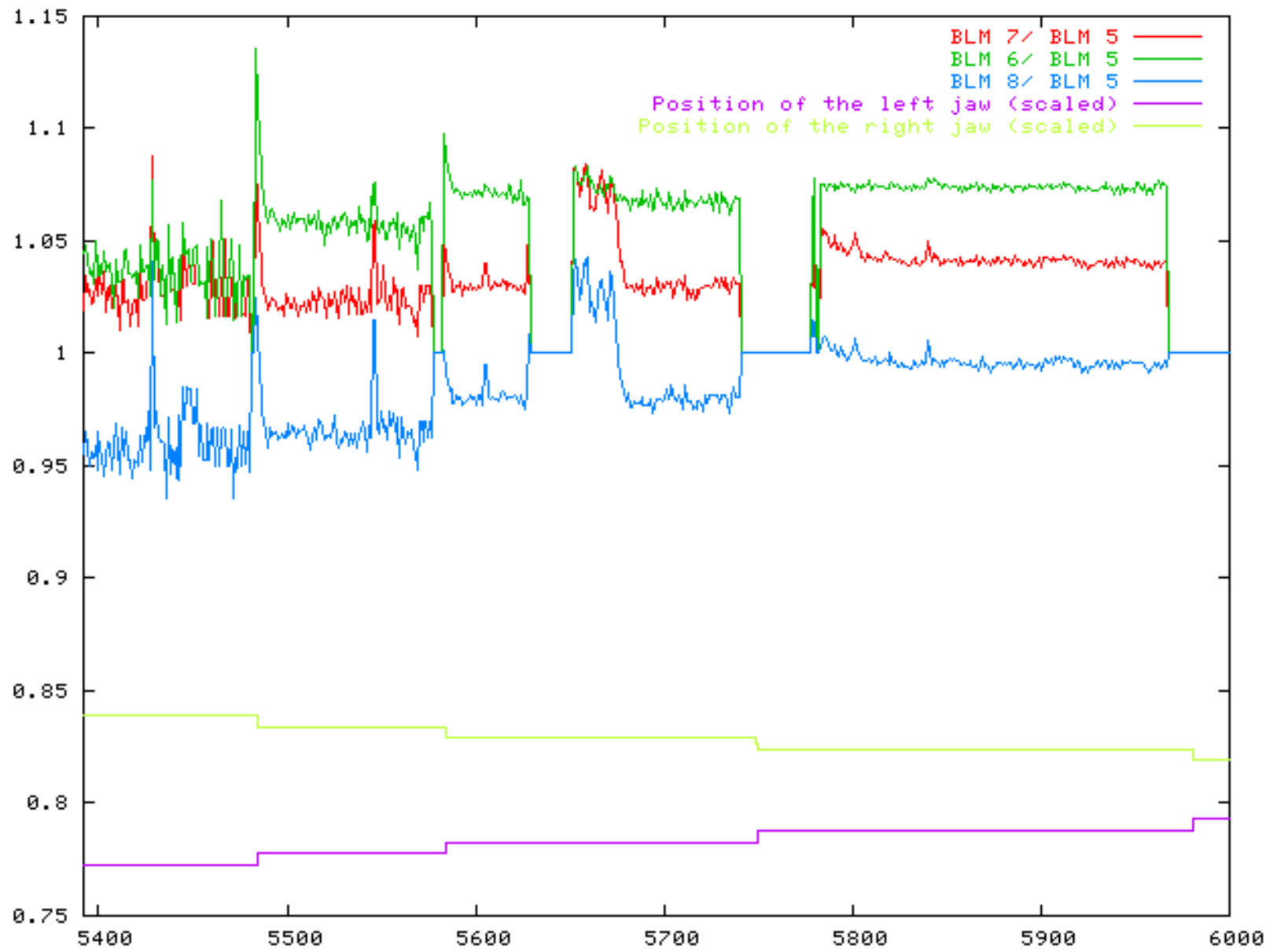




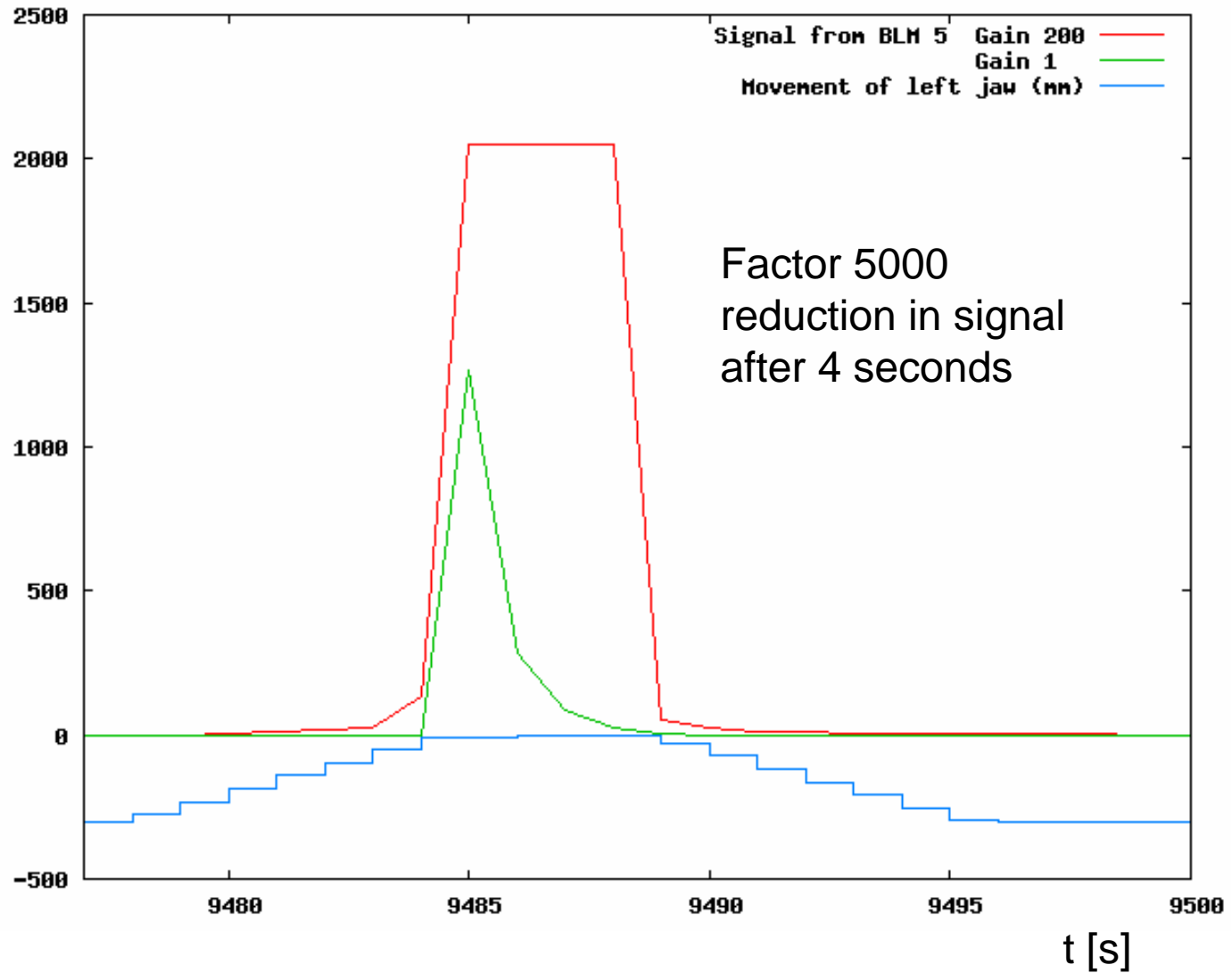








Activation?



Activation measurements in the SPS

- Lit: G. Ferioli, R.L. Keizer, Analysys of the induced radioactivity in the SPS extraction channels during 1994, SL/Note 95-06 (BT)
- Ionisation chamber based measurements during the fast extraction (SPS LSS6) and after to determine the remaining activation
- Location of monitors: near kicker magnets and septum's
- Ratio between fluence of losses and activation 2000

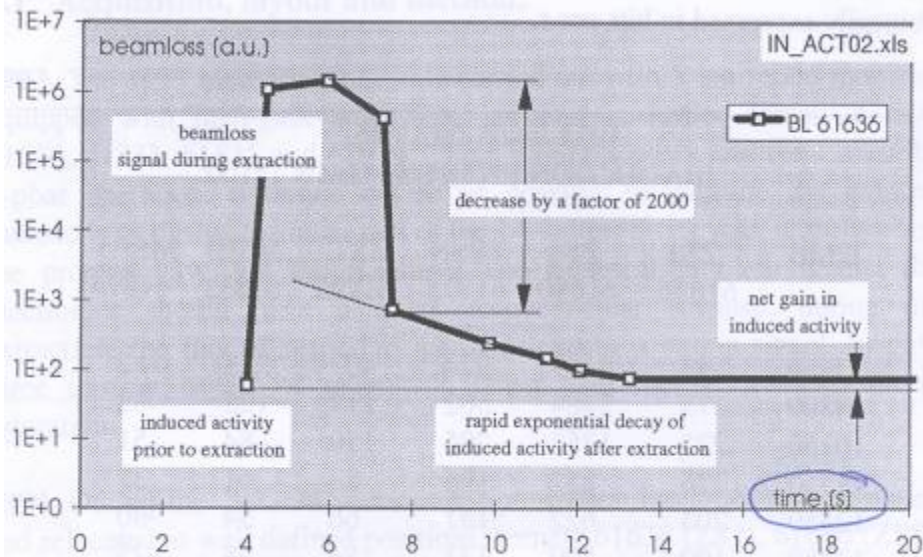


Fig 1 Activation and exponential decay

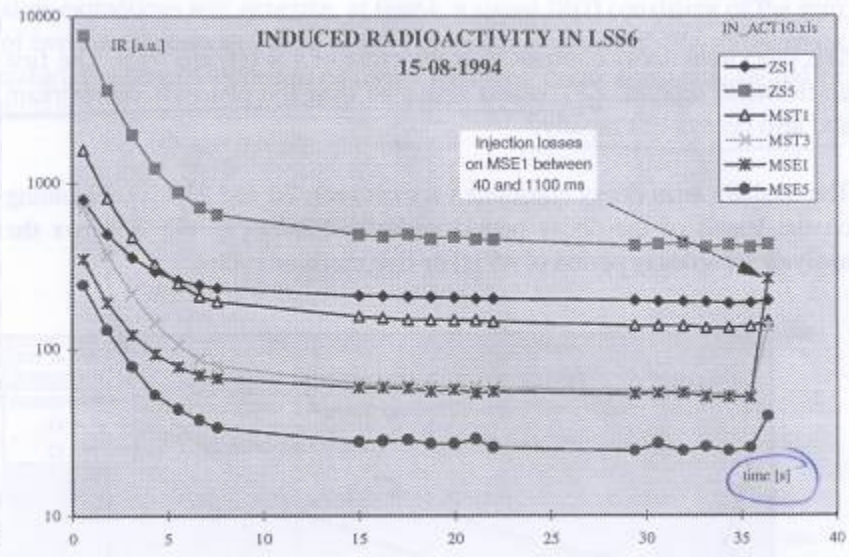


Fig 2 Decay of the IR immediately after f/s extraction

Decay constants

- Two decay constants
 - $t_1: 1.75 \text{ s}$
 - $t_2: 278 \text{ s}$

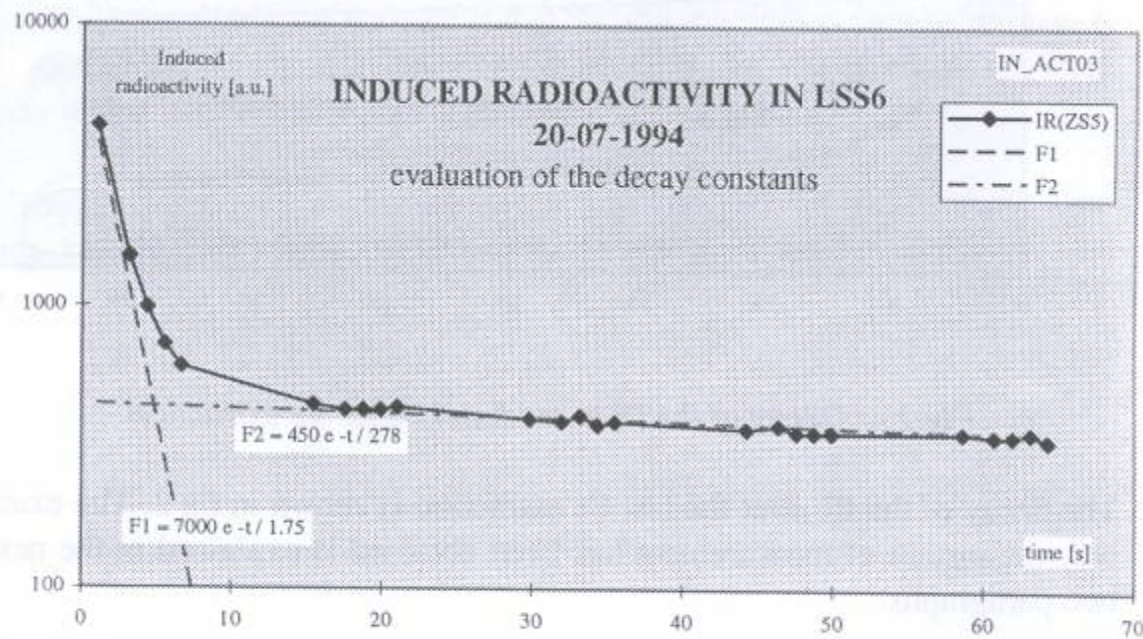
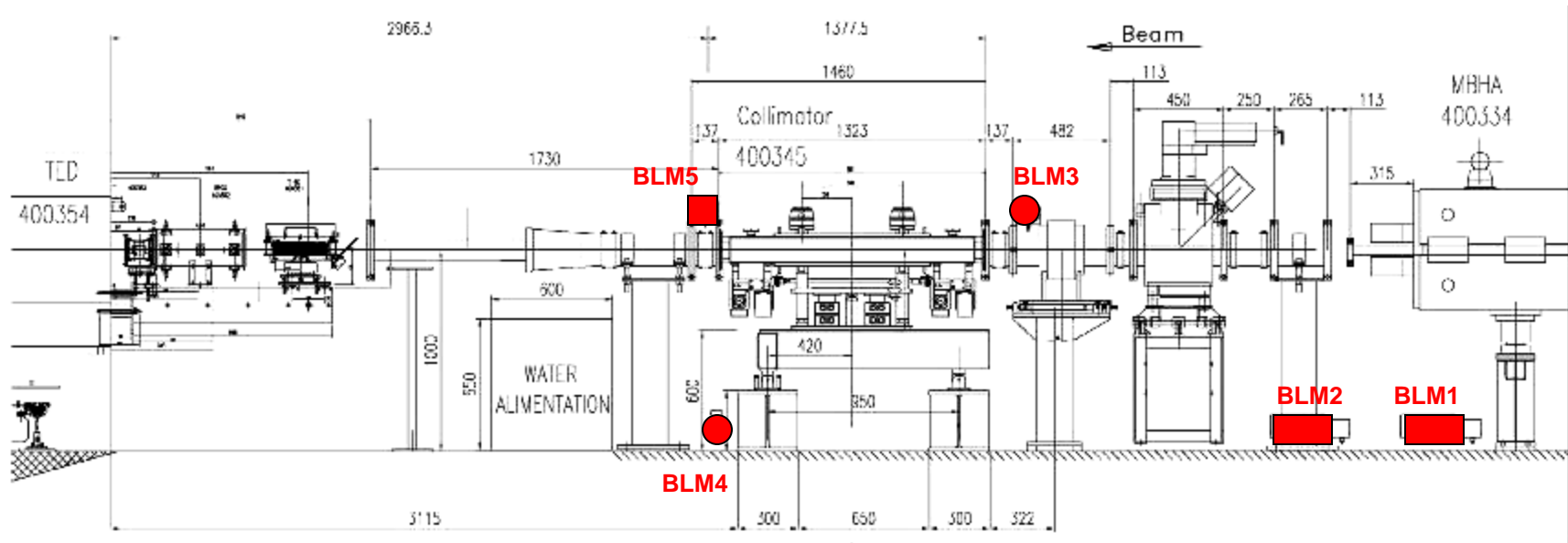


Fig 3 Analysis of the decay of the IR

TT40

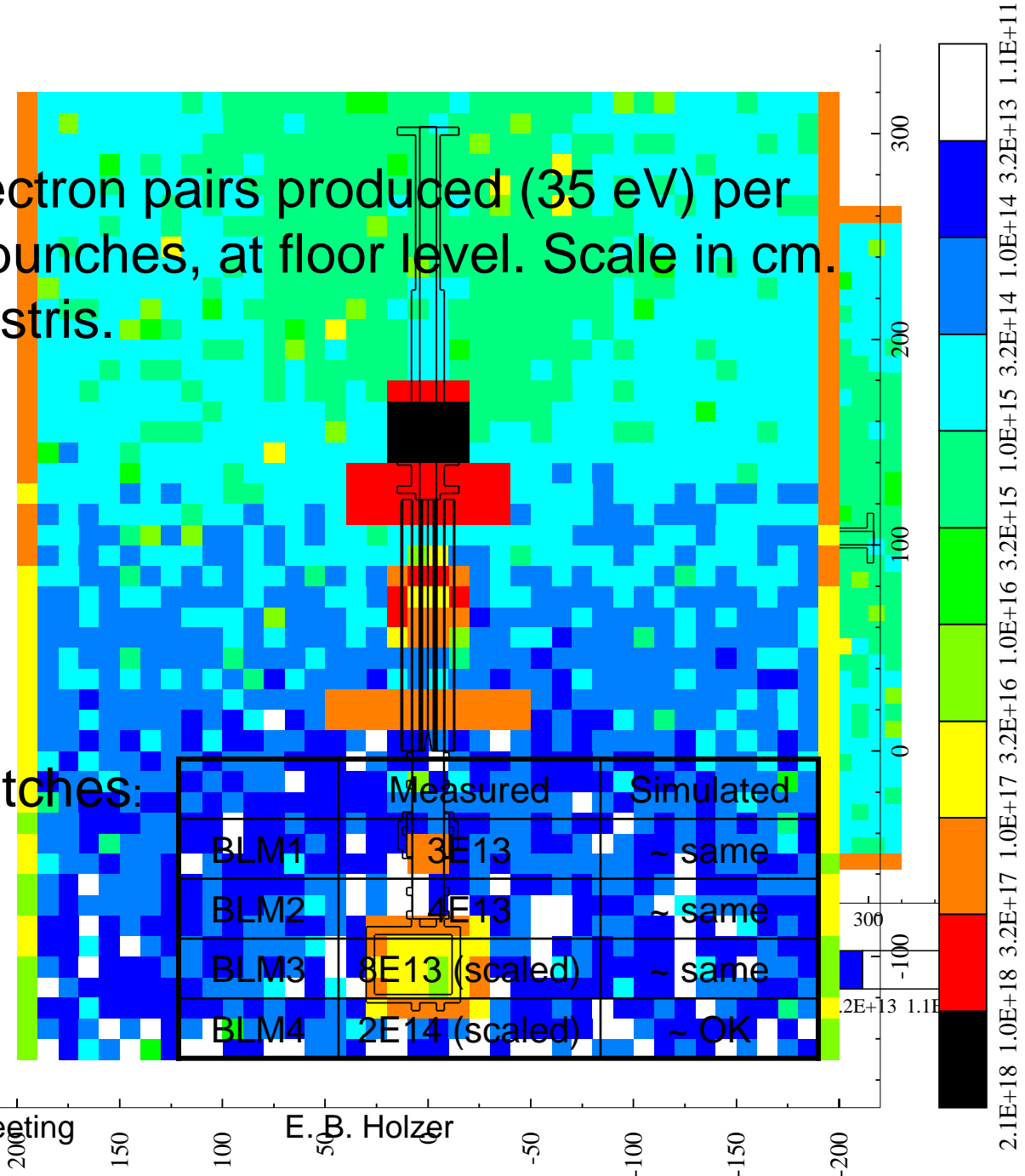
- BLM1 – BLM4: ionization chambers
- BLM5: SEM (no calibration)



Number of electron pairs produced (35 eV) per litre by 4X72 bunches, at floor level. Scale in cm.
 From M. Magistris.

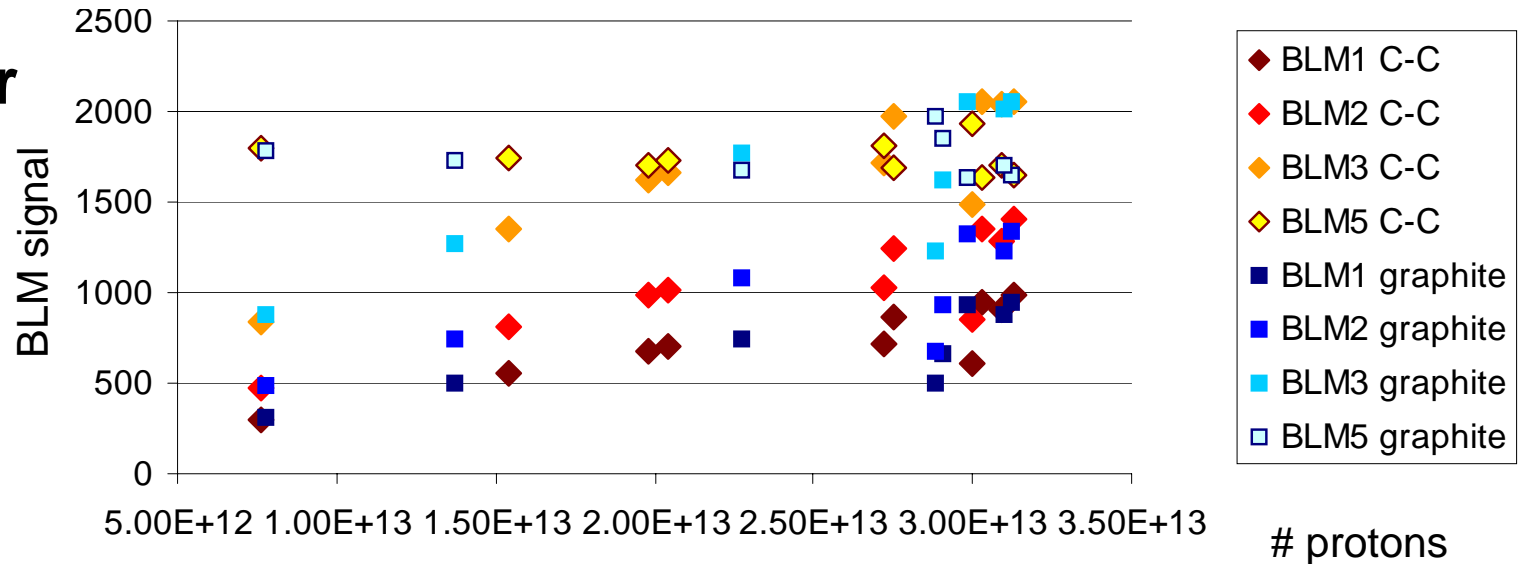
Signal for 4 batches:

	Measured	Simulated
BLM1	3E13	~ same
BLM2	4E13	~ same
BLM3	8E13 (scaled)	~ same
BLM4	2E14 (scaled)	~ OK

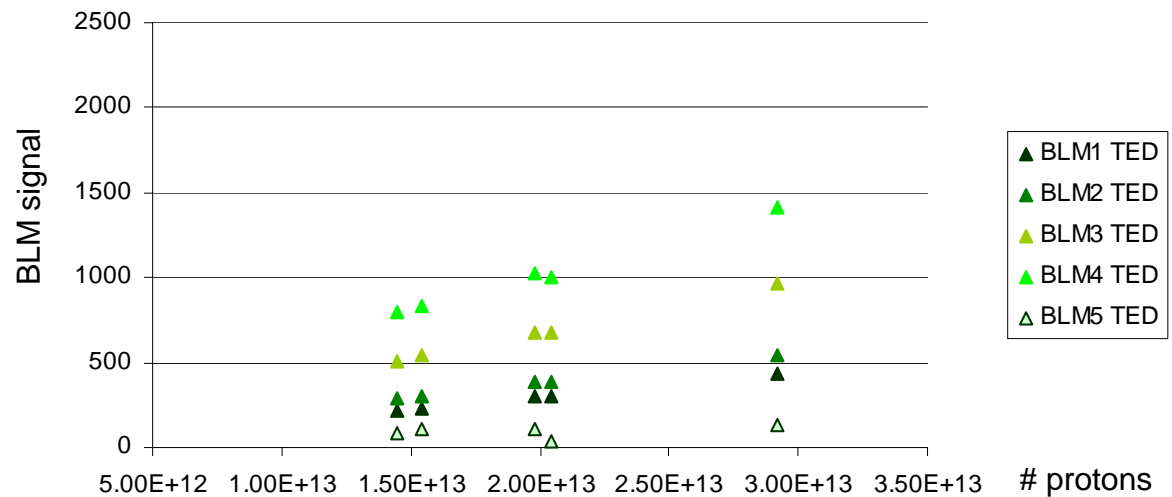


1 - 4 Batches on both Collimator Jaws and the TED

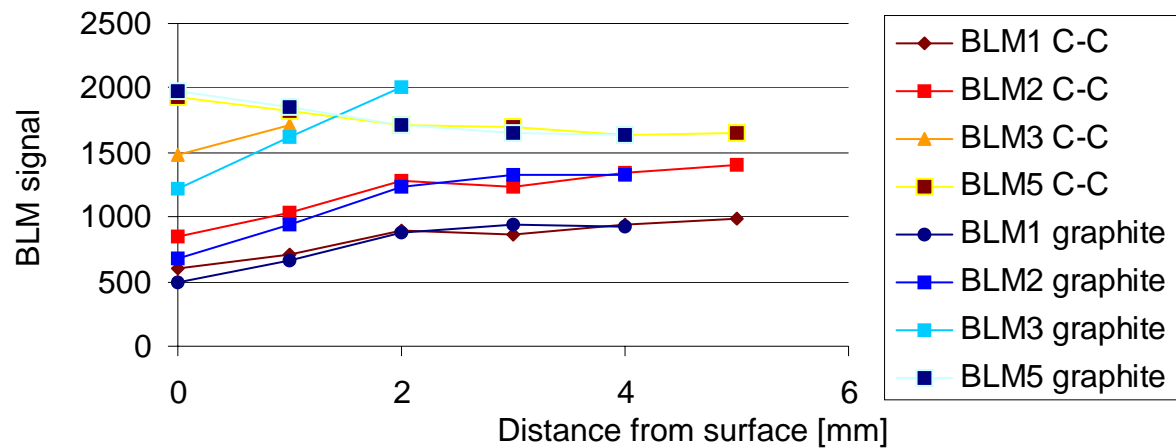
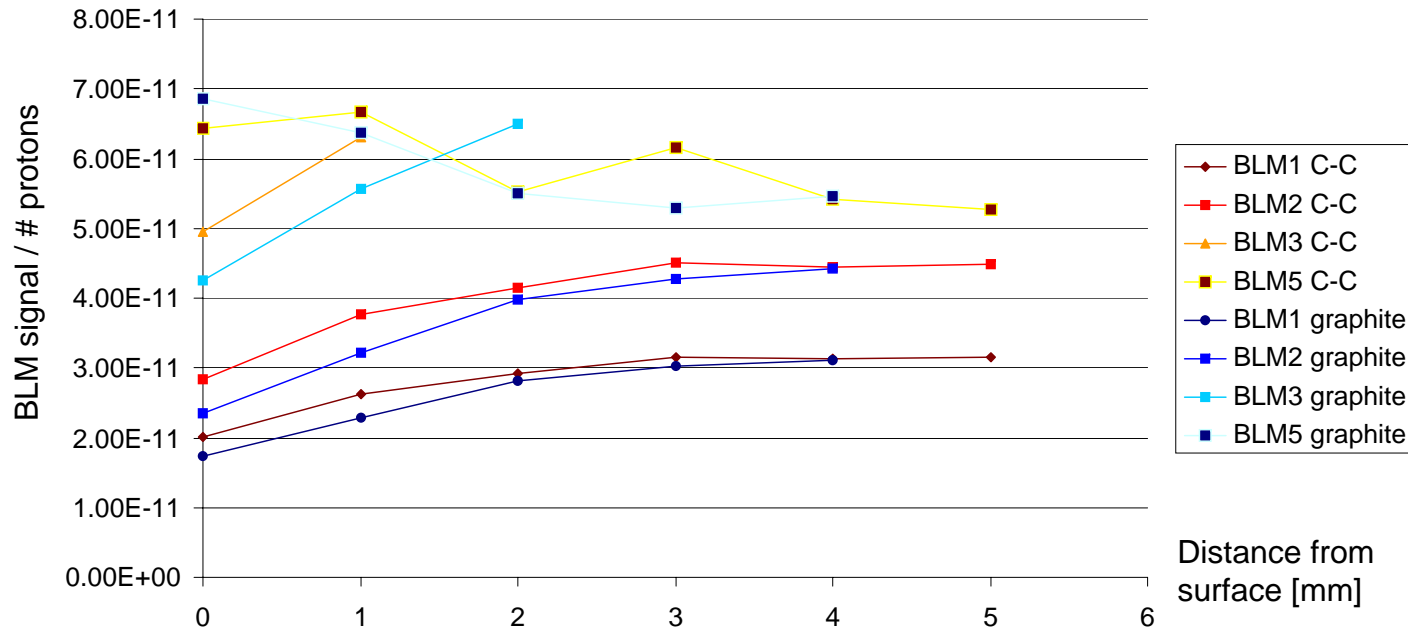
Collimator



TED



Scanning the Impact Position on the Jaws



Summary

- No activation observed (Signal decreases by at least a factor 5000 when collimator moves out).
- “Tails” in distributions are from the beam.
- BLM signal is linear with proton intensity.
- Left-right asymmetry of the shower depends on the collimator gap size and gap position.
- Slight top-bottom asymmetry?
- BLM signal depends on the impact position on the jaw.
- Compares ~ OK with simulations (TT40).
- Further analysis ...