CERN Linac4 Laserwire Update

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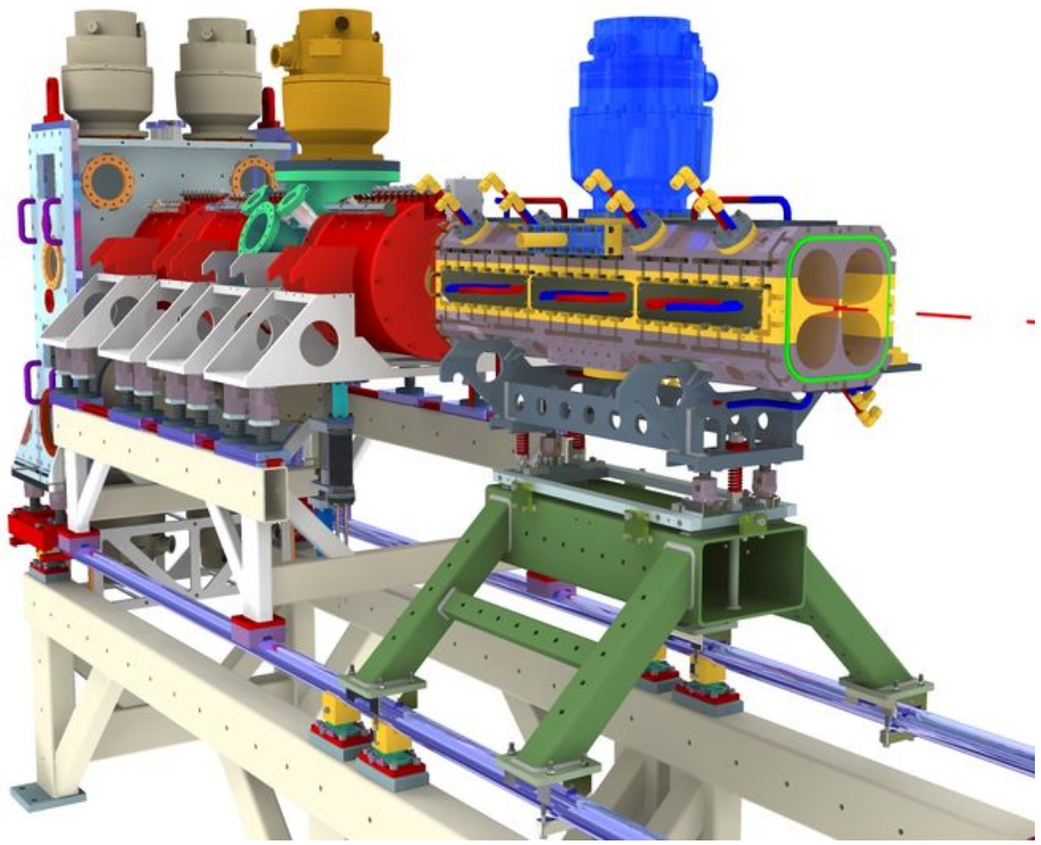
Outline

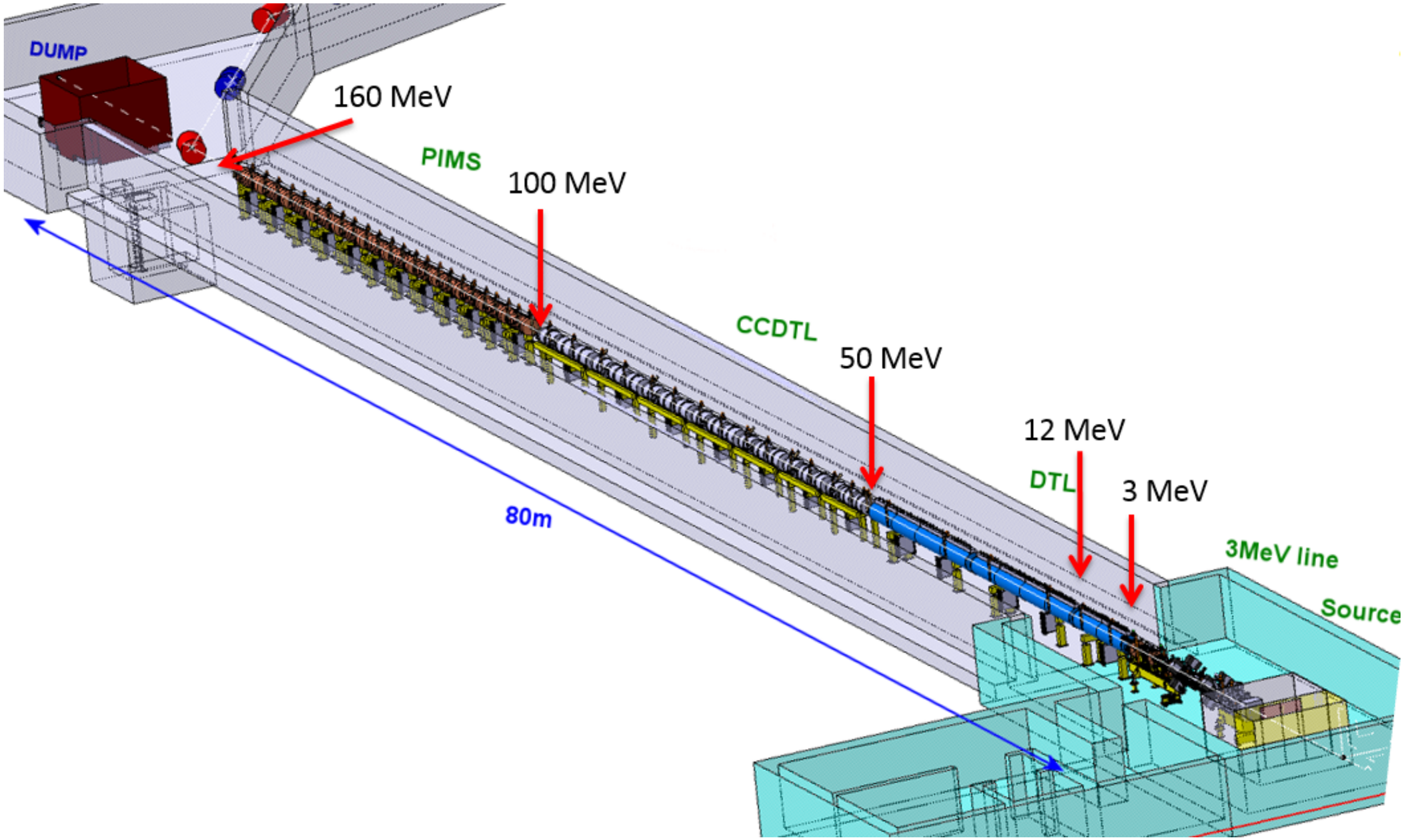
- Status
- 50 MeV concept
- Recent installation at CERN



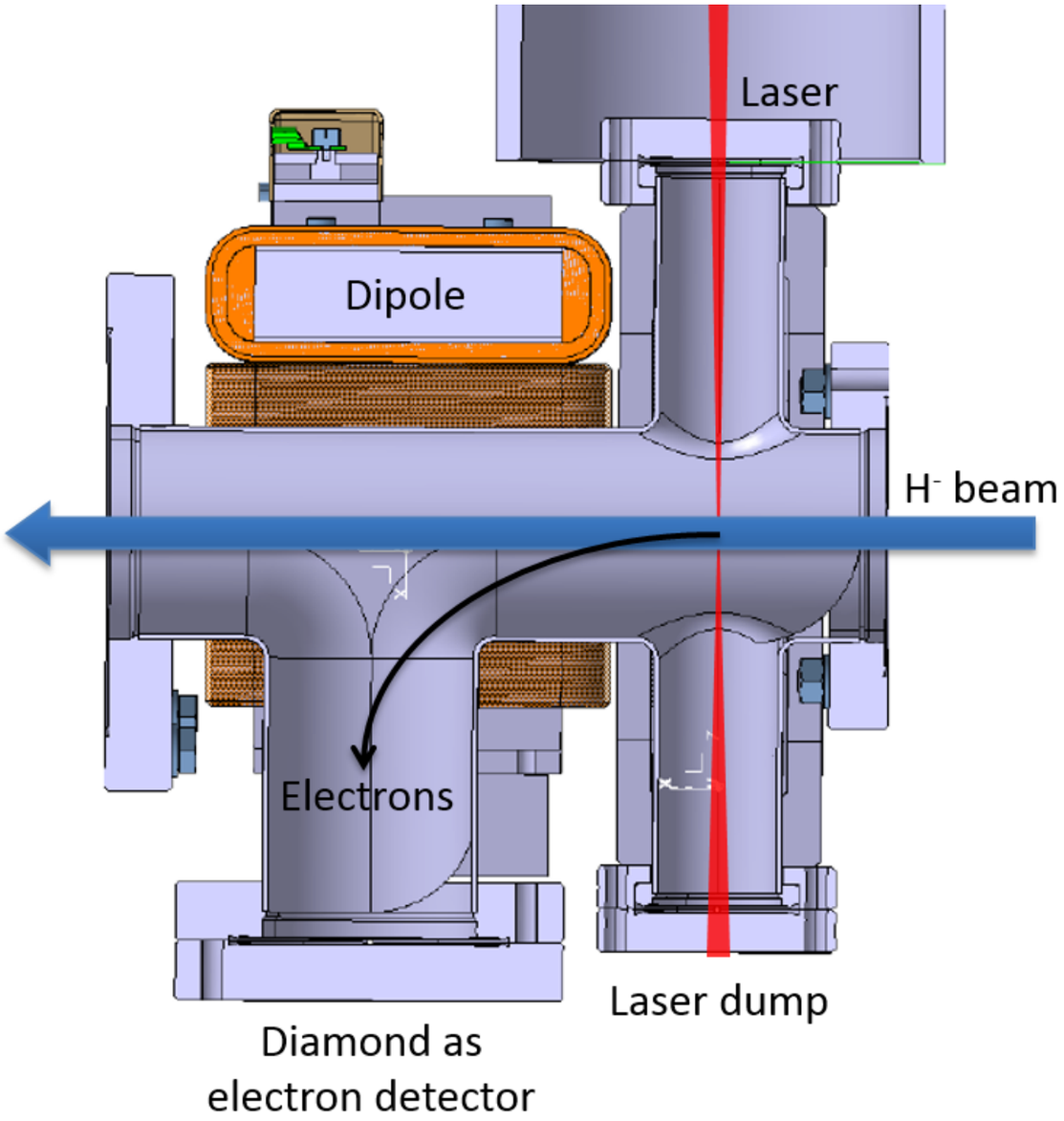
Status

- 3 MeV results paper submitted to PR-STAB in 24 August 2015:
  - T. Hoffman et al. `Demonstration of a laserwire emittance scanner for the CERN LINAC4 H- Beam'.
  - http://arxiv.org/abs/1508.05750
- 12 MeV conference proceedings invited for submission to NIMA in October 2015:
  - T. Hofmann et al 'Experimental results of the laserwire emittance scanner for LINAC4 at CERN'.
- Linac4 plans for 50 MeV / 100 MeV :
  - Poster presented at IBIC 2015 last week:
  - T. Hoffman et al, 'Design of a laser based profile monitor for Linac4 commissioning at 50 MeV and 100 MeV.'
  - http://ibic.synchrotron.org.au/papers/tupb055.pdf

Linac4 commissioning overview



50 MeV laserwire conceptual design



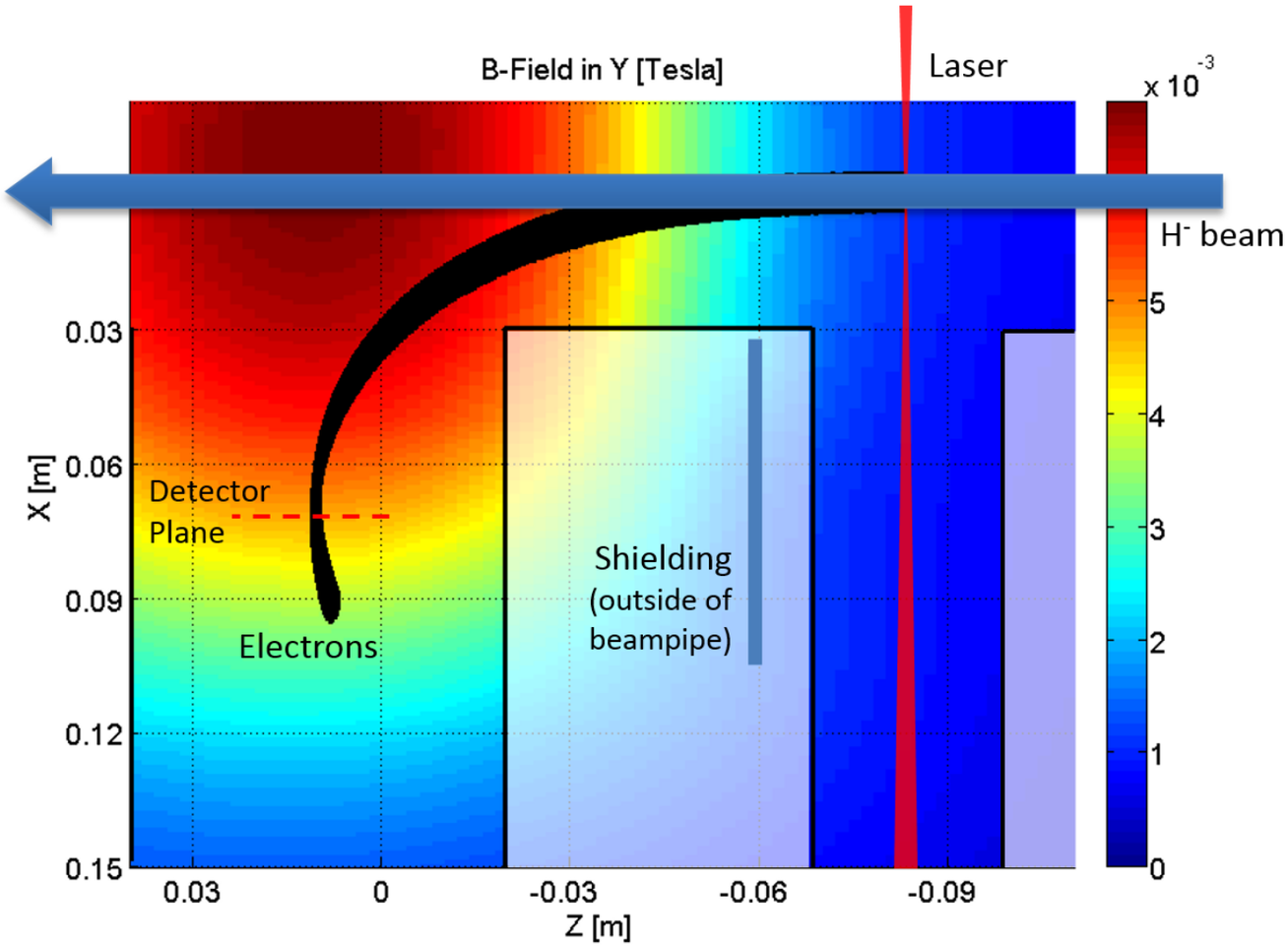


Figure 6: Magnetic field map (in Tesla) and electron trajectories (black) from the laser interaction point to the diamond detector. White areas are outside of beam-pipe.

New sCVD diamond detector

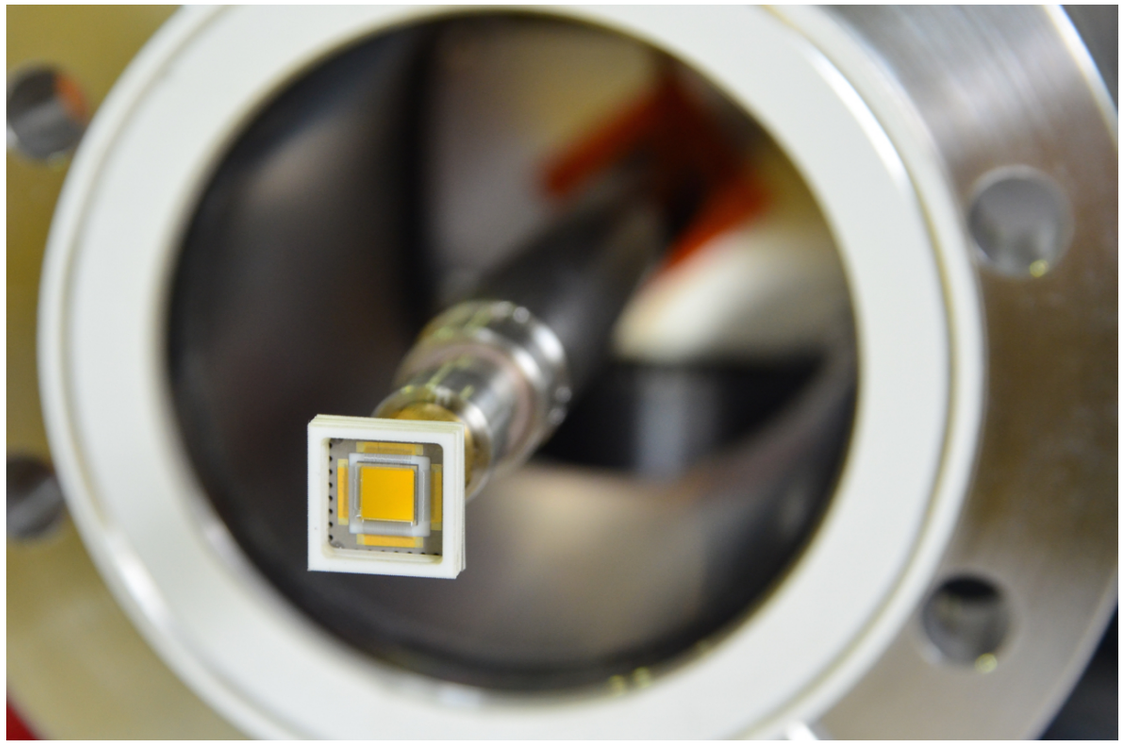


Figure 8: sCVD diamond detector [12] mounted on the actuator that is part of the laser monitor assembly for the 50 MeV experiment.

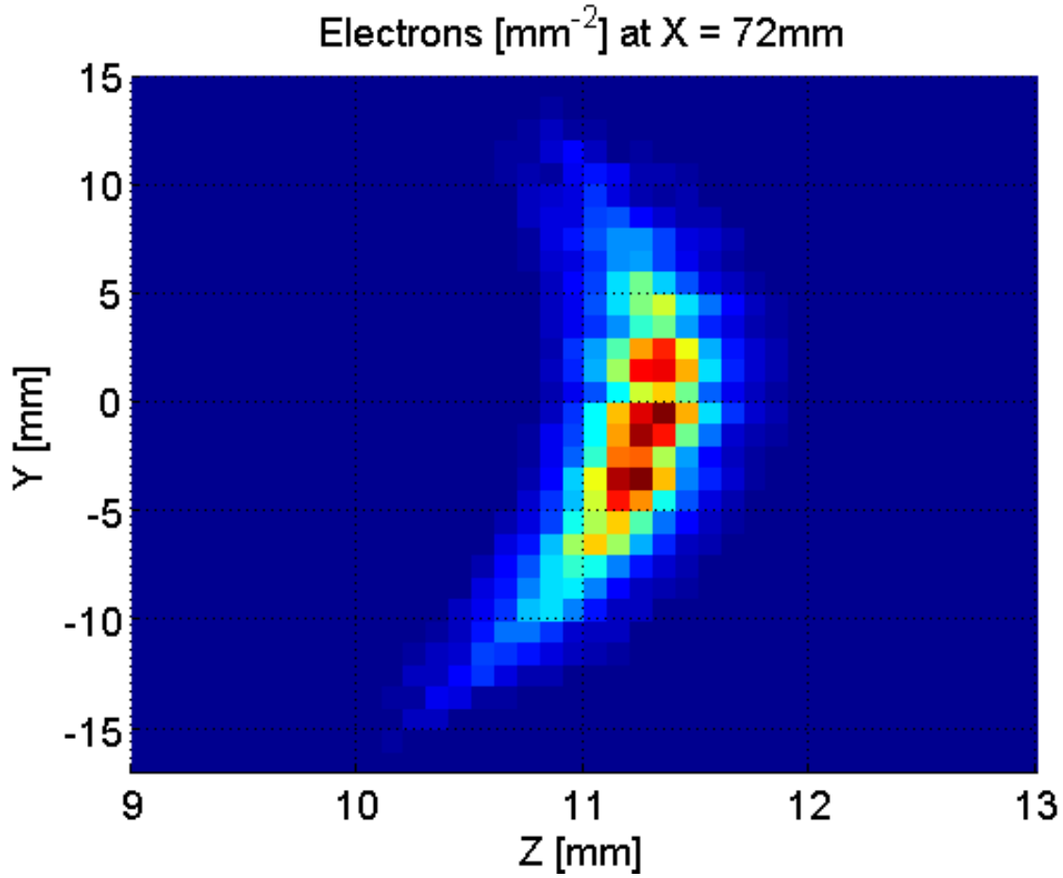
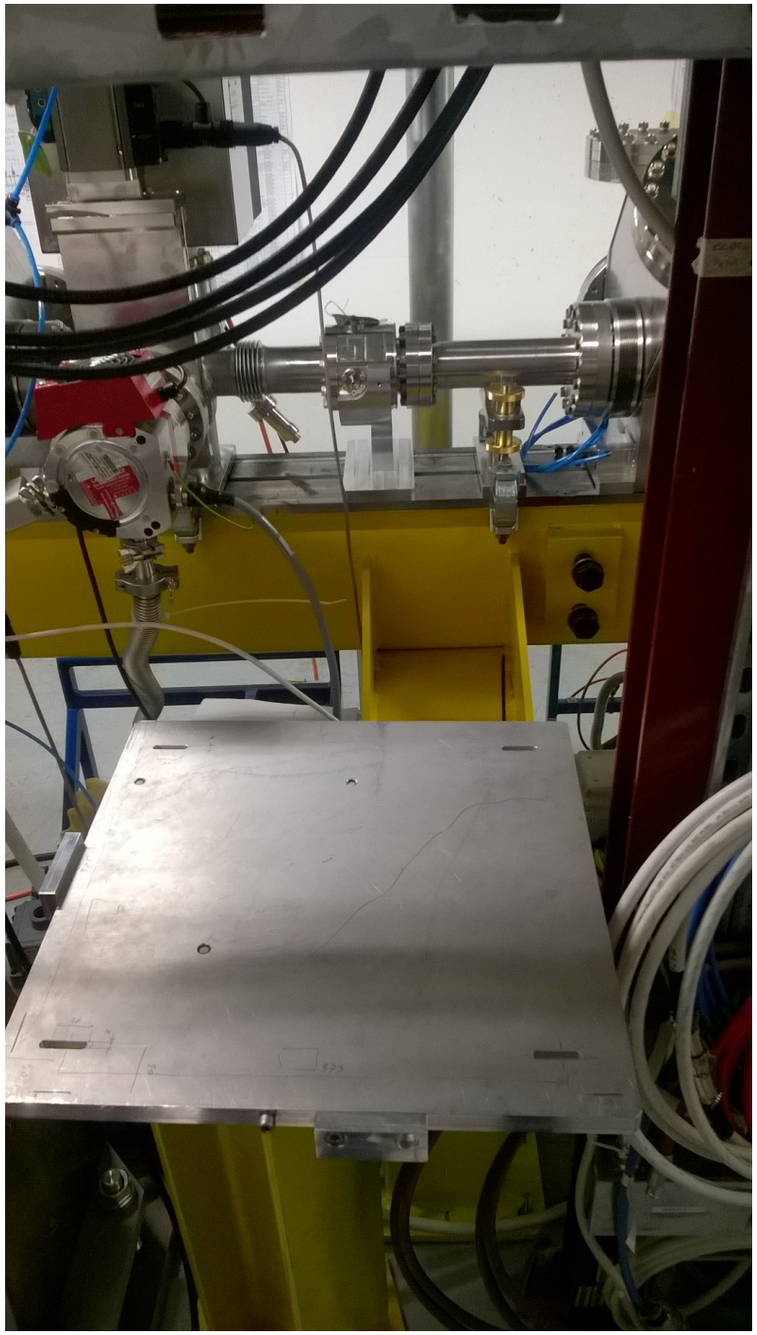


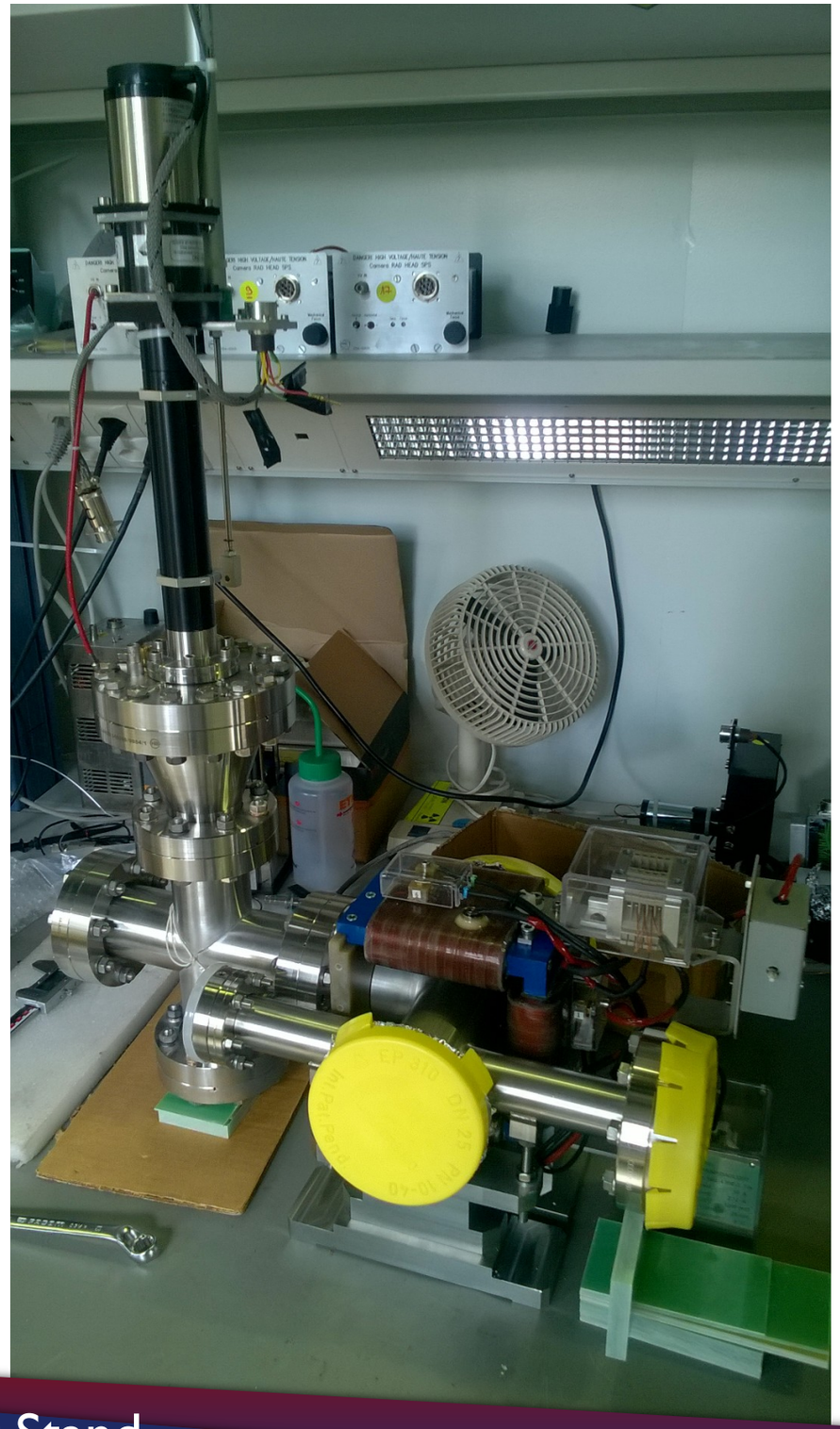
Figure 7: Expected electrons distribution at the detector plane, accounting for all laser positions during a scan.

Preparation for installation

Stand for laserwire delivery system at beam line



Vacuum chamber and magnet



Vacuum chamber installation

Installation of the laserwire vacuum chamber, 26th August 2015.

Laserwire delivery box aligned and installed with Thomas during Stephen & Alessio's visit, 24th – 27th August 2015.

Installed, ready for beam

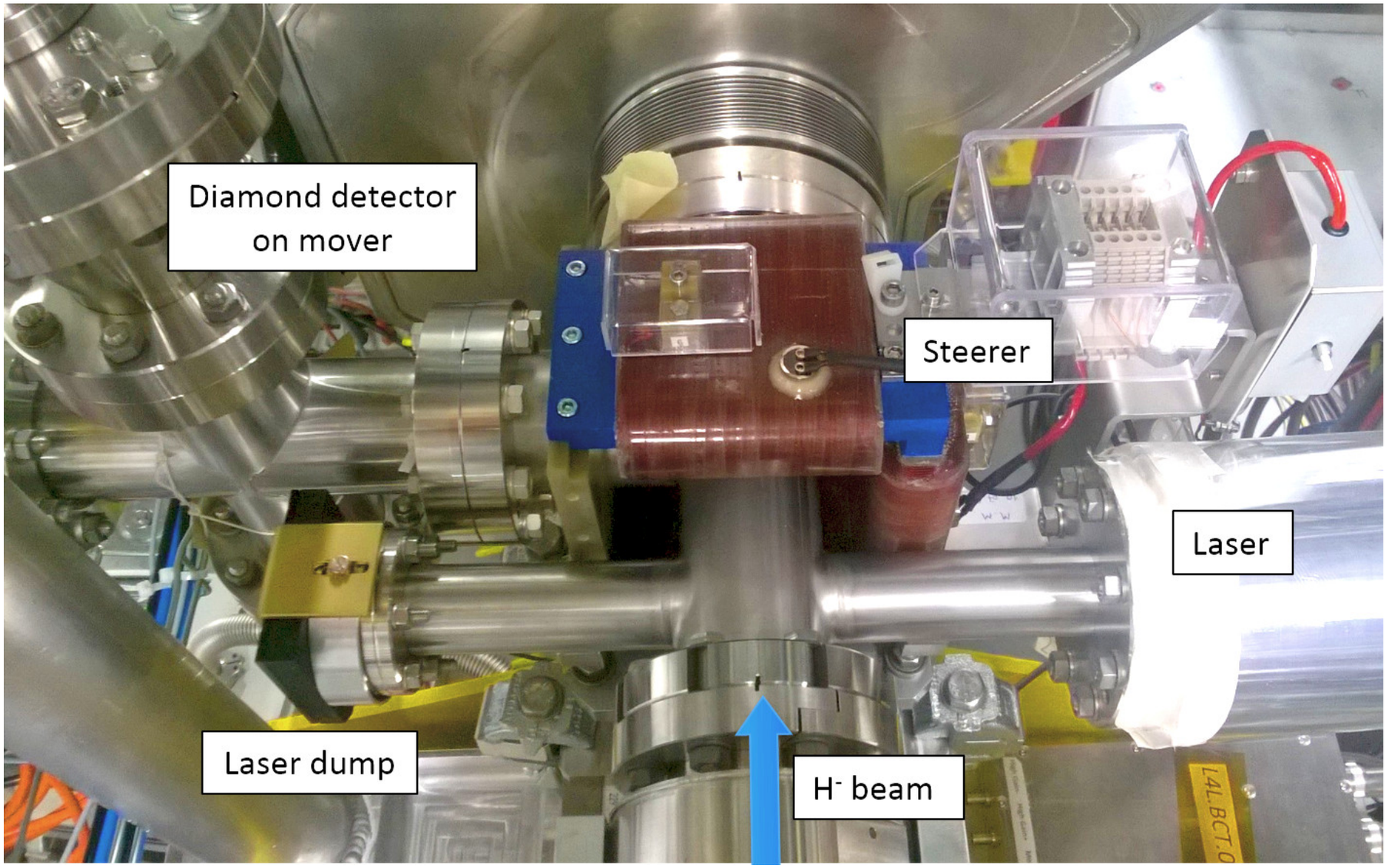


Figure 10: Installed system at the LINAC4 diagnostic test-bench.

Gary to visit CERN next week to update control and DAQ software.

Expect first beam at 50 MeV in October (schedule on next slide)

Linac4 schedule