

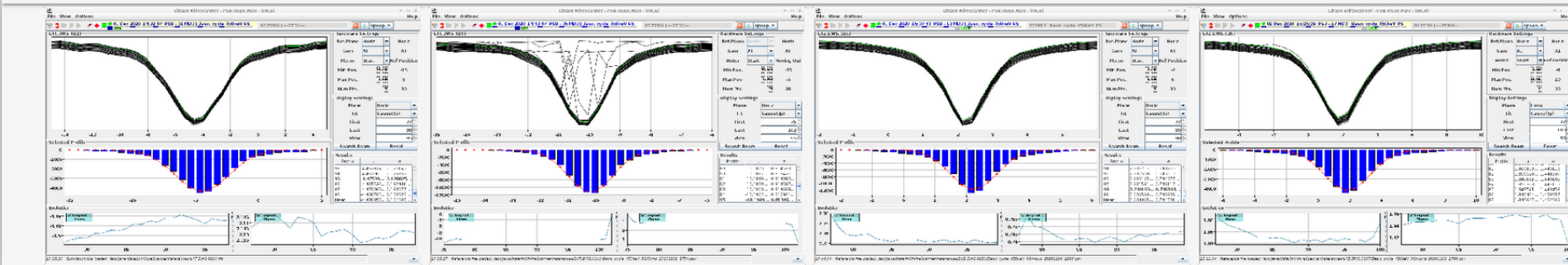
Linac4 FOM Report

B. Mikulec for the Linac4 team

Report w49 (1)

Tuesday:

- Source gas injection slightly increased on Tuesday to stabilise the source (first adjustment since 12th of October)
- Profile measurements taken in the Linac4 dump line to re-confirm emittance after Linac4 phasing. **Nice profiles with less tails** (see H plane below).



- Problems with the debuncher phasing after Linac4 phasing, as the TOF gave inconsistent results
- Could not perform BSM measurements beginning of the week due to a defective ADC channel in the SIS33 board; as there was no spare available, a similar ADC board was 'borrowed' from M. Bozzolan; settings were adjusted on Thursday; since then BSM measurements were again possible

Report w49 (2)

Wednesday/Thursday:

- PIMS11/12 TOF measurements and trajectory changes indicated that the **beam energy was too high**. After lengthy investigations and a partial rephasing attempt starting from PIMS05/06 on Thursday, the **issue was traced back to a small pre-driver amplifier** (between the LLRF system and the amplifier at the input of the Klystron, leading to oscillations of the forward power), which was **exchanged** by the LLRF team.
- Thursday **level 3 recovery of the RFQ** (hard breakdown triggering a cluster of breakdowns) → waiting time 20 minutes to restart.

RFQ BD analysis.

There was a hard BD in the cavity (at 14:55:49) which triggered a cluster of BDs. The BD protection worked very well. Level1 lowered the cavity voltage to 95% which was not low enough so that more BDs occurred. L2 with 90% was not low enough either but in L3 the RFQ recovered. A few minutes later a few more BDs occurred that were cured in 2x L1 recovery.

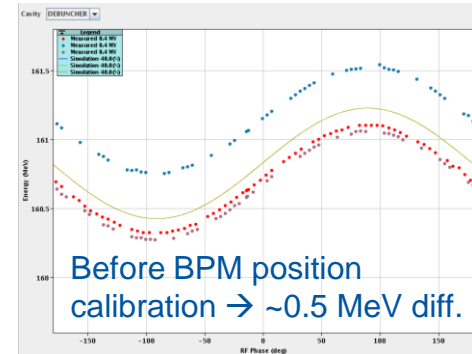
Friday:

- Source and RF were stopped from 8-10am to **switch on the Meyrin ME9 compensator**. Central timing reboot in parallel (another reboot required in the afternoon).

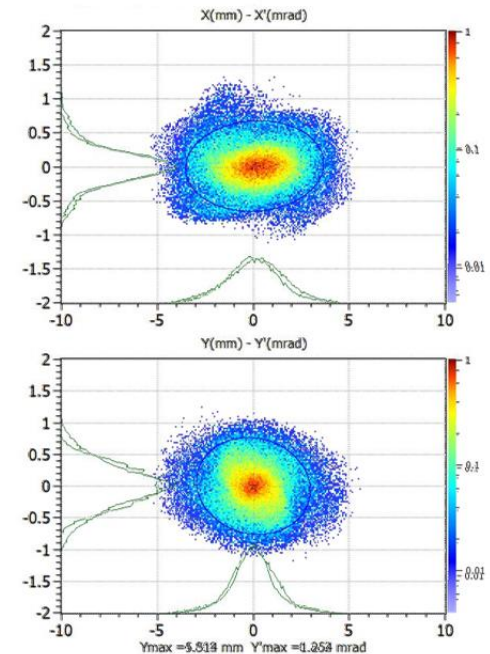
Report w49 (3)

Friday (ctn.):

- M. Bozzolan calibrated the L4T BPM distances with beam to provide consistent TOF measurements between different pairs → debuncher phasing done and propagated to the different optics.
- LBE profile measurements for LBE emittance reconstruction after Linac4 phasing; nice profiles and emittance
 - **Forward tracking to foil shows good convergence with the expectations within the errors.**
- **Settings of all operational users were re-checked and the machine prepared for Monday morning 7/12 (including detuning of the debuncher).**



LBE measured – 100keV – tracked to foil
Overlapped with expected

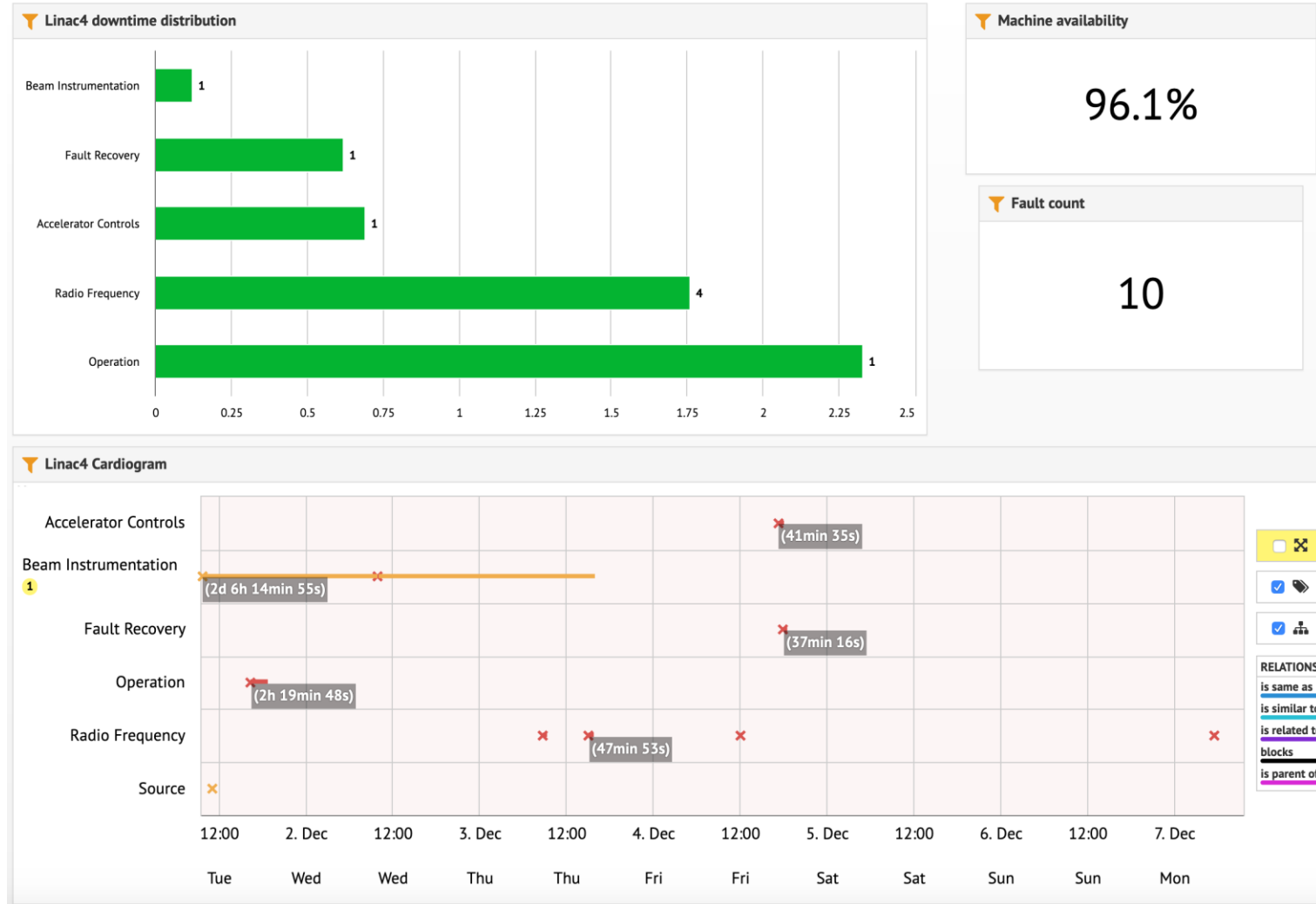


Report w50

Monday:

- **Providing first beam to the PSB!!!** (see PSB report)
- Saw that the beam head is not fully chopped away (see PSB report)
- LBE profile measurements for LBE emittance reconstruction with debuncher detuned

AFT



Planning

- Today adjust source parameters after caesiation and take measurements with different RFQ amplitudes to take the final decision on the operational settings; LEBT and MEBT re-optimization by ABP
- Re-check and potentially optimise optics to Linac4 dump
- Stripping foil measurements during this week to qualify new European suppliers for possible future orders
- **From Monday next week beam operation to the LBE dump!**