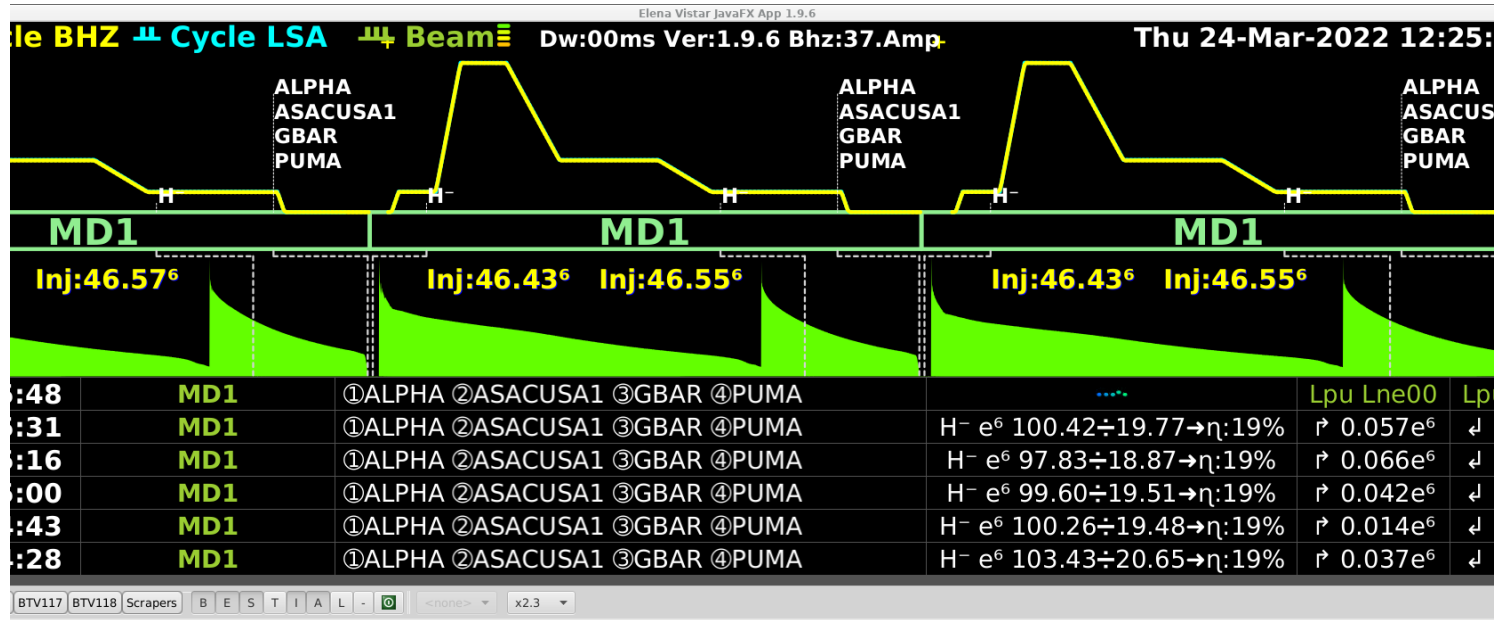


AD/ELENA beam status

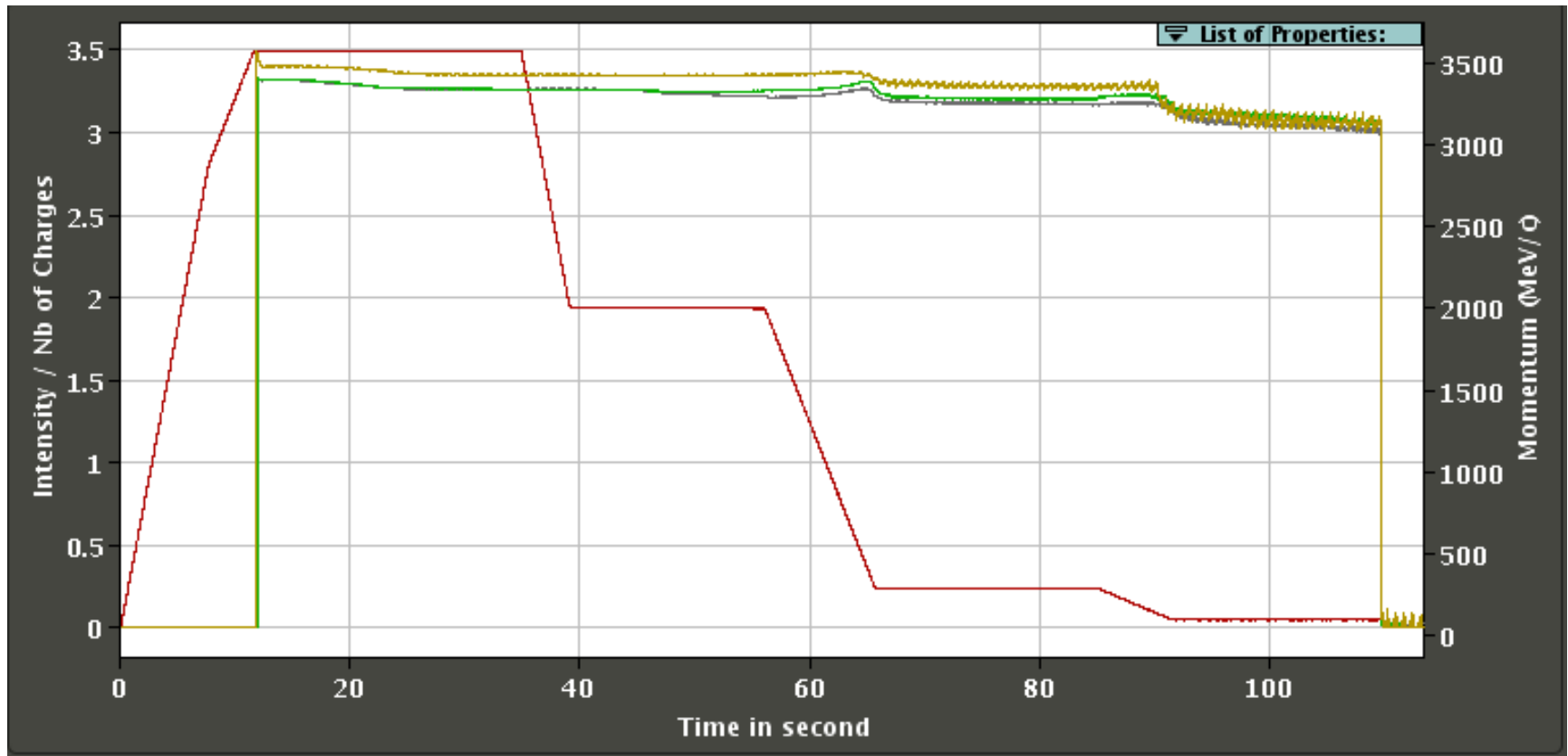


User meeting - 26/04/2022

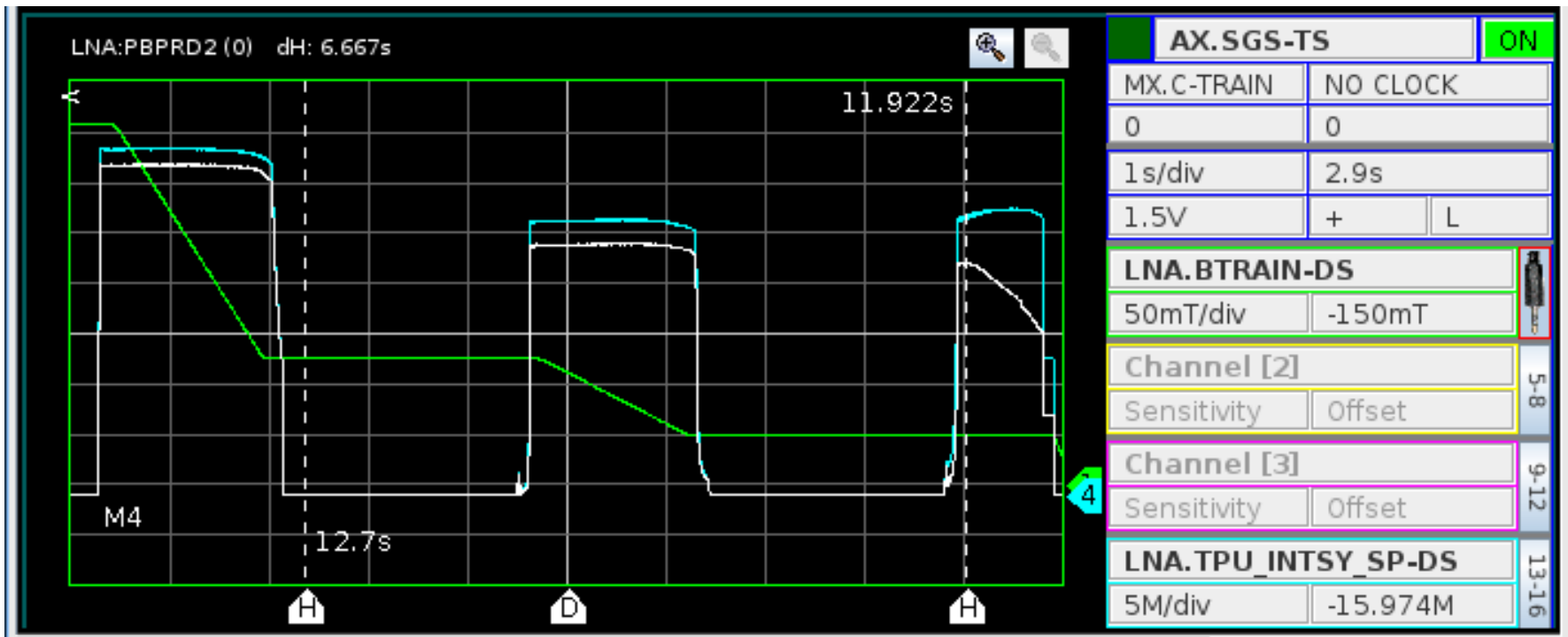
D. Gamba for the AD/ELENA team



- AD cycle close to end of 2021 (at injection)
 - But same extracted intensity!



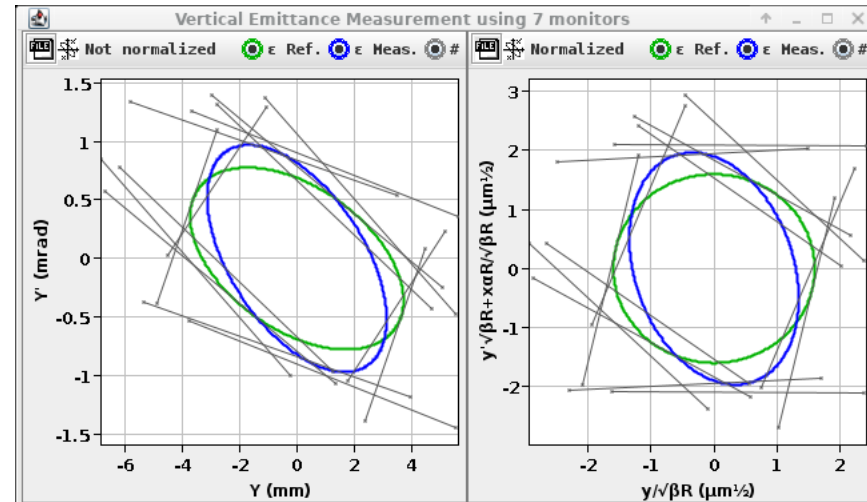
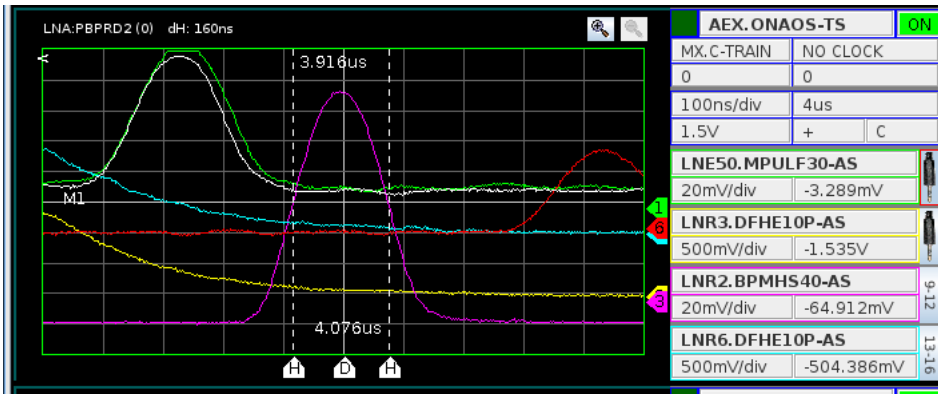
- Cycle very similar to 2021
 - (Probably) a bit better transmission
 - Still working on absolute intensity measurement...



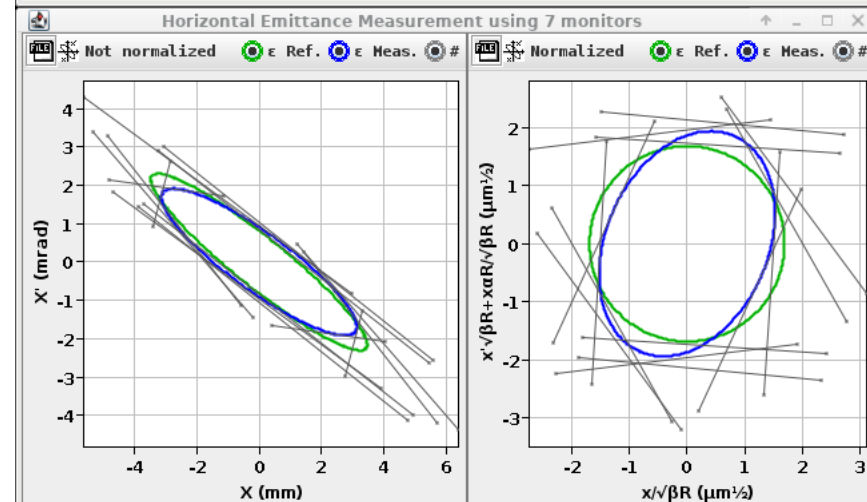
Beam extracted from ELENA



- Emittances still too big wrt to design: about 2.5 μm in both planes
 - Still trying to optimise...
- Bunch length comparable to last year: about 160 ns FWHM
 - Shall we introduce **bunch rotation** as end of last year?



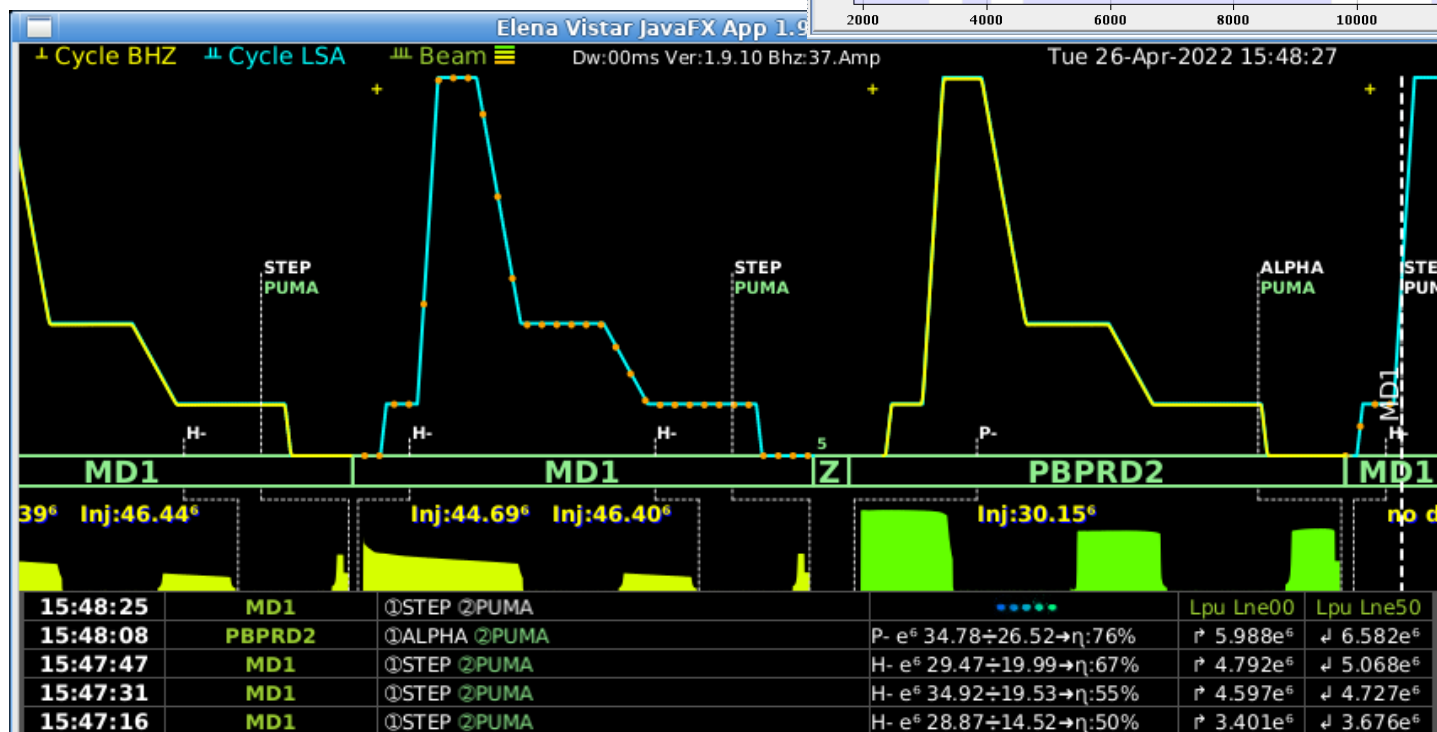
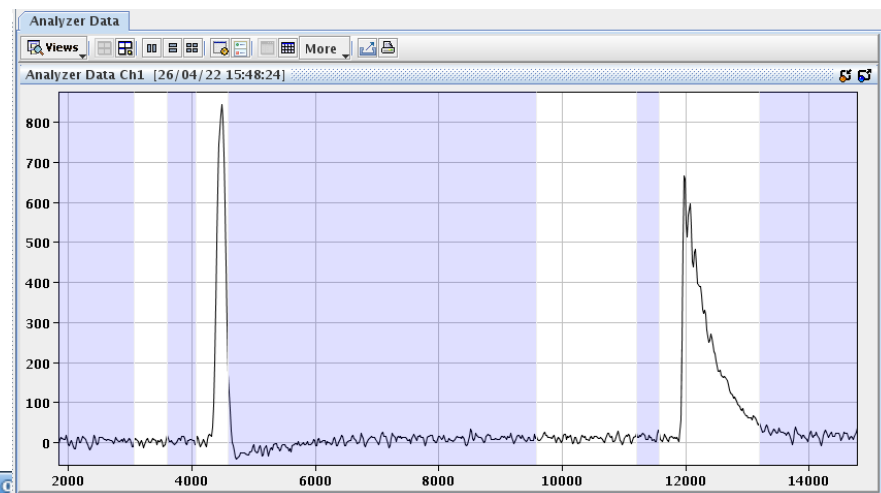
Vertical Emittance Measurement (using 7 monitors) Tue 26-Apr-2022 15:28:46
 Relative rms momentum spread of $\Delta p/p=0$
 $\epsilon=2.55\mu\text{m}$ $\beta=3.81\text{m}$ $\alpha=0.63$
 Geometric mismatch=1.26 Twiss mismatch=1.59



Horizontal Emittance Measurement (using 7 monitors) Tue 26-Apr-2022 15:28:46
 Relative rms momentum spread of $\Delta p/p=0$
 $\epsilon=2.84\mu\text{m}$ $\beta=3.43\text{m}$ $\alpha=1.85$
 Geometric mismatch=1.21 Twiss mismatch=1.45

Extracted beam intensity

- Similar to end of last-year:
 - $>6e6/\text{bunch}$
 - but measurement still not reliable: working on it...



- BEAM at least as good as end of 2021
 - Better control of key elements (s-cooling, e-cooling, RF, ...)
- Still a couple of days to improve parameters that you believe are the most important to start with
 - **Bunch length?** (bunch rotation can be easily deployed)
 - **Emittance?** (will be hard, but we can try)
 - **Repetition rate?** (probably a few seconds to gain in AD)
 - **Reliability?** (some issues with hardware to be investigated)
 - **Intensity?** (probably something to gain from AD target)
 - **Intensity measurement?** (will probably improve only later during the year)

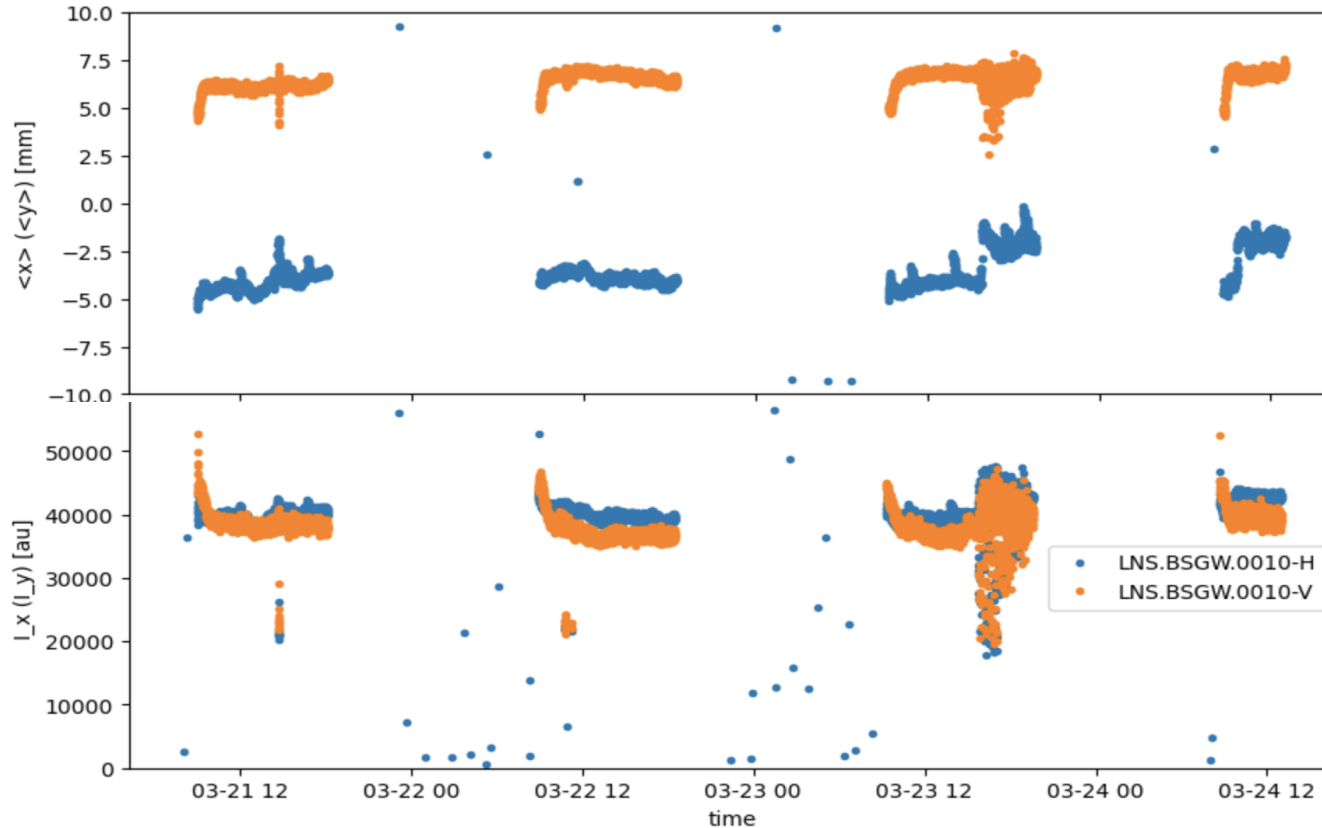
Thanks to the hard work and flexibility of all teams!

Backup

Excellent stability of the H- source



- Reasonably stable in beam position and intensity (LNS SEM)

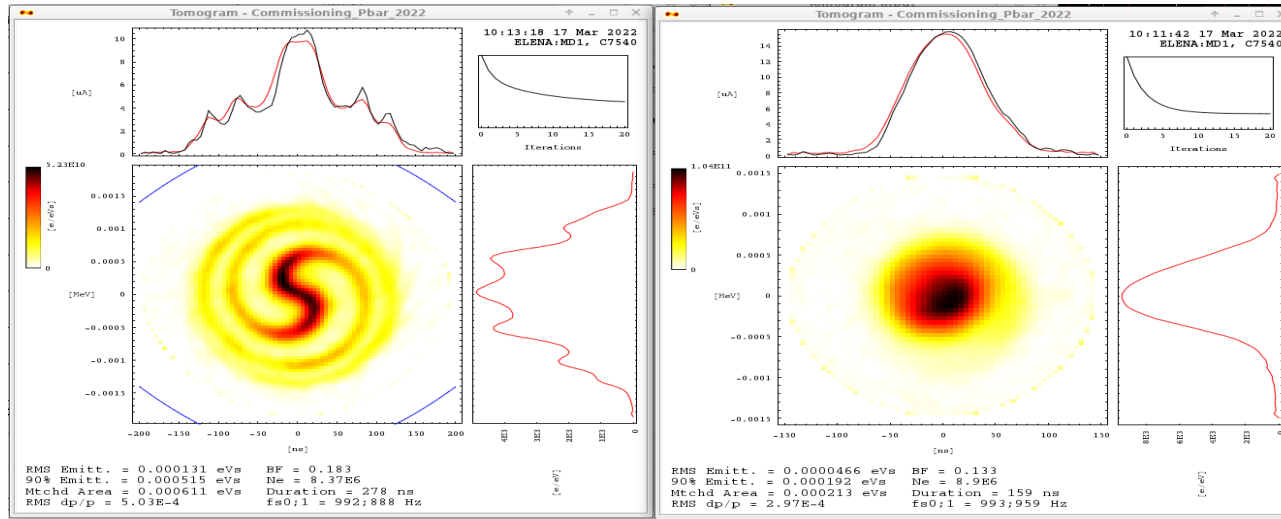


- Some (**rare!**) breakdown have raised worries for hardware integrity
 - To be kept under observation

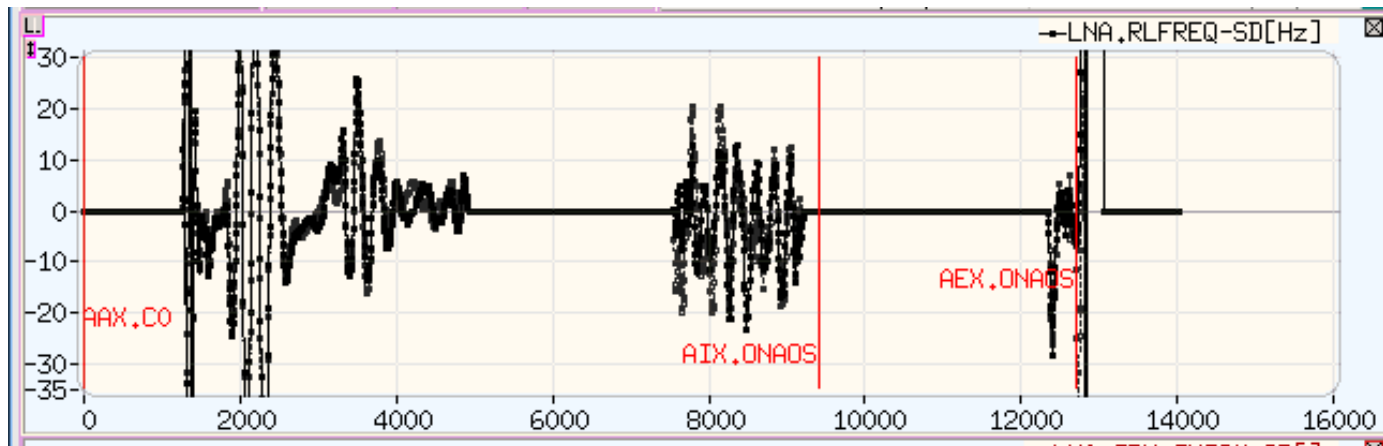
Optimisation of cycle control – examples:



- Re-setup of RF segments after logic/hardware modification during YETS



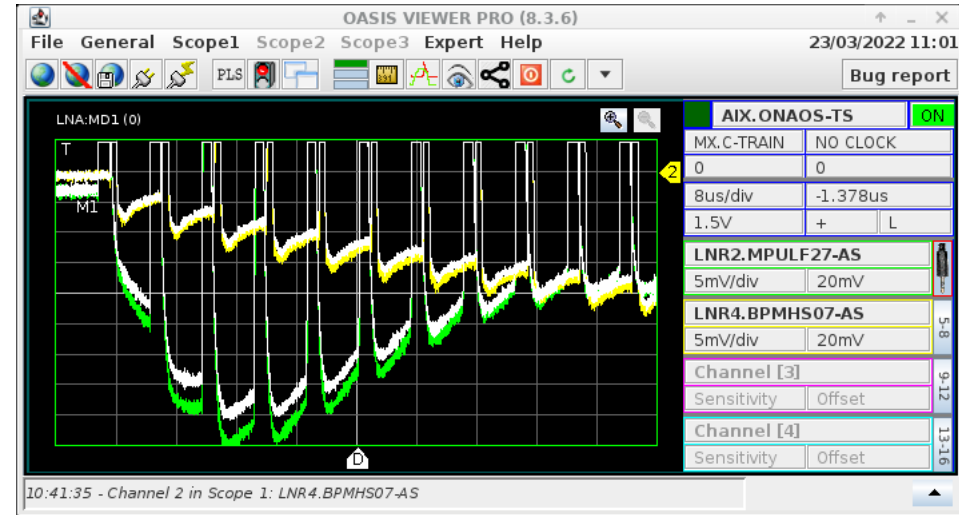
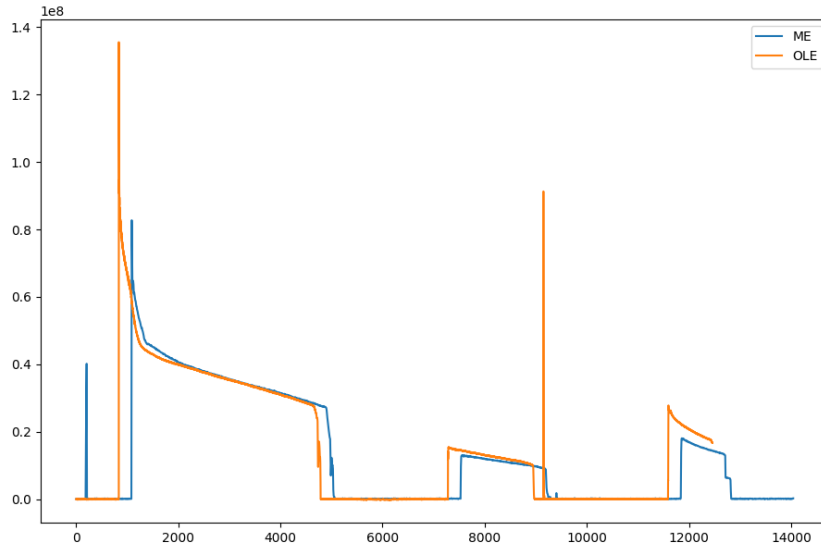
- Correction of machine momentum (as testeds already in 2021)



Study of intensity measurement



- **In the ring:** tests by Ole on new intensity estimate from BPM baseline



- **In the transfer lines:** work on triggering of TRIC cards
 - + moving forward to have a TRIC card also for measuring ring injected intensity

