



Linac4

Week 48

Federico Roncarolo

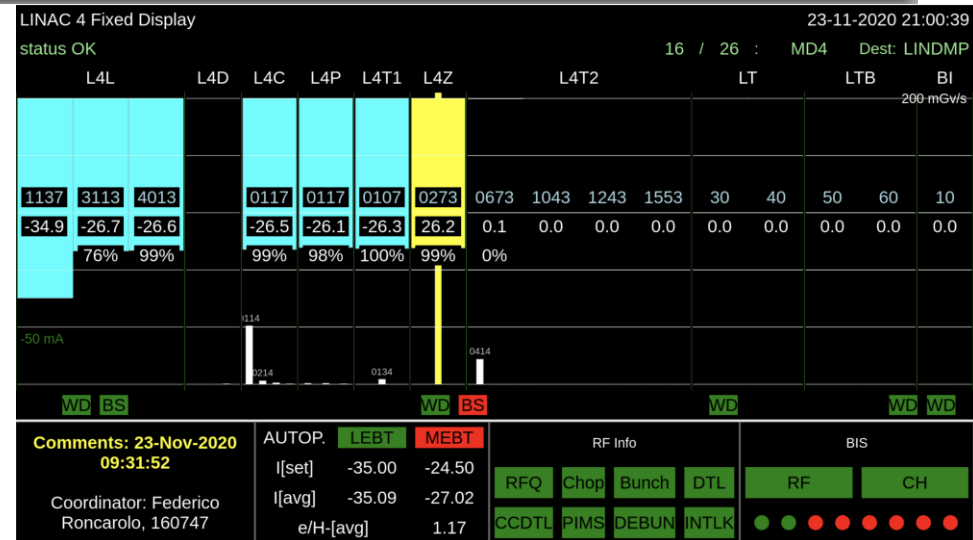
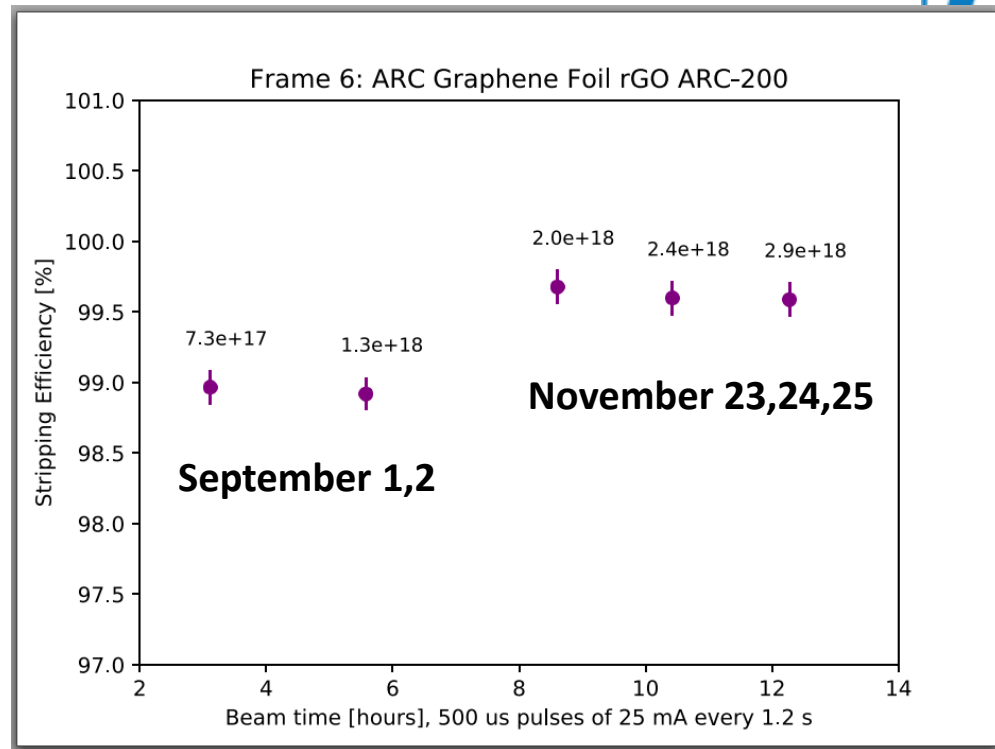
- (as in week 47) Beam to Linac4 dump only (PSB and SWY access)
- Monday to Wednesday:
 - Transverse emittance measurements in L4T-L4Z line. Looks within nominal values (with some tails). Analysis not fully conclusive (also because 1 prof monitor with problems, next point). More meas. this week
 - Investigation of L4T.BWS.0243 'corrupted' profiles (see next slides)
 - Test/Setup 150ns beam (PSB commissioning beam). All ok.
 - BSM meas while changing PIMs 10-11 phases, to study long emittance
 - CO test: stop LIC Central Timing (LEI, PSB, CPS, SPS) for about 10 min.
 - "The main purpose of this intervention is a verification of a proper recovery of different systems by the respective experts" to avoid unexpected downtimes in the future after Central Timing upgrades.
 - Stripping foil tests (evenings and early mornings) – see next slides

- Thursday - Access:
 - BE-BI: Replacement of 3 wire grids + 1 scanner in L4T line
 - L.Timeo/M.Buzio : Risk assessment about residual magnetic fields and effects on pacemakers
 - TE-EPC : change of ADC card for monitoring klystron temperature
- Friday morning
 - DSO test (driven by change in RF crate, part of EIS)
- Friday Afternoon:
 - Recovery
 - BSM checks – ok (after small instrument re-tuning)
 - Check of new grids + scanner

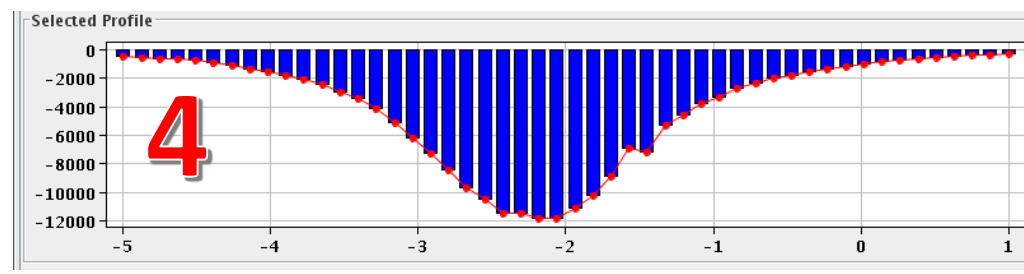
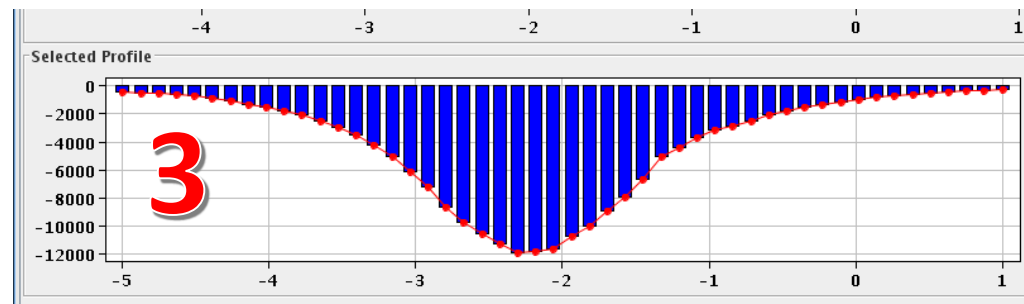
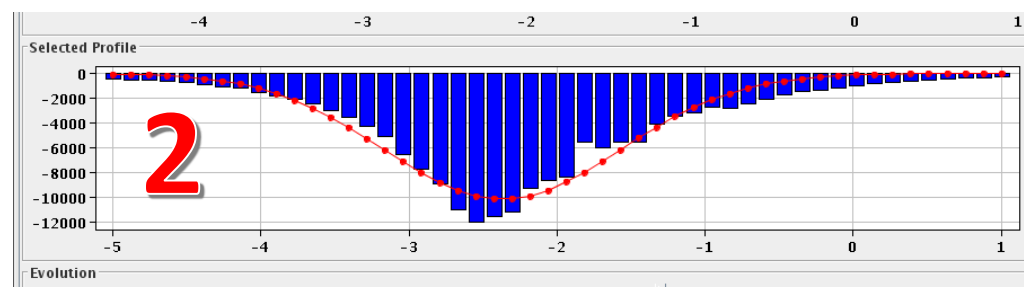
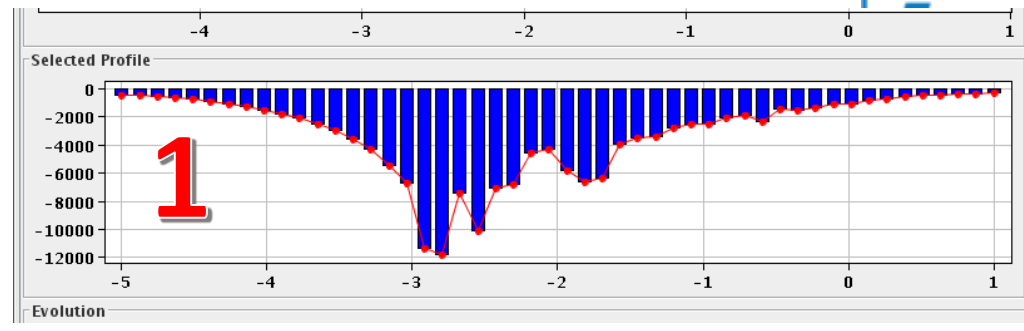
Stripping foil test

Main goal: Lifetime test Foil Frame 6, ARC Graphene Foil rGO ARC-200.

- Stripping efficiency based on downstream-upstream BCTs
- November efficiency >> September
 - New MEBT matching, Less tails?
 - Better steering?
- 23 Nov (slightly better than 24 and 25)
 - Emittance optics (H waist in between foil and BCT, less losses?)
- 24 Nov morning: RP called to warn about higher rad levels on dump water circuit.
 - Normal, given SF run == long pulses toward dump for xx hours, not played recently
 - Rad levels well below risk



- Problem: distorted H profile during emittance meas (waist)
 - 1 ■ 100us pulses, >20mA, every 1.2s
 - 2 ■ 50us
 - 3 ■ 25us
 - 4 ■ 100us interleaved with 3x1.2s ~ZERO cycles
- After many other investigation, Wed afternoon tests:



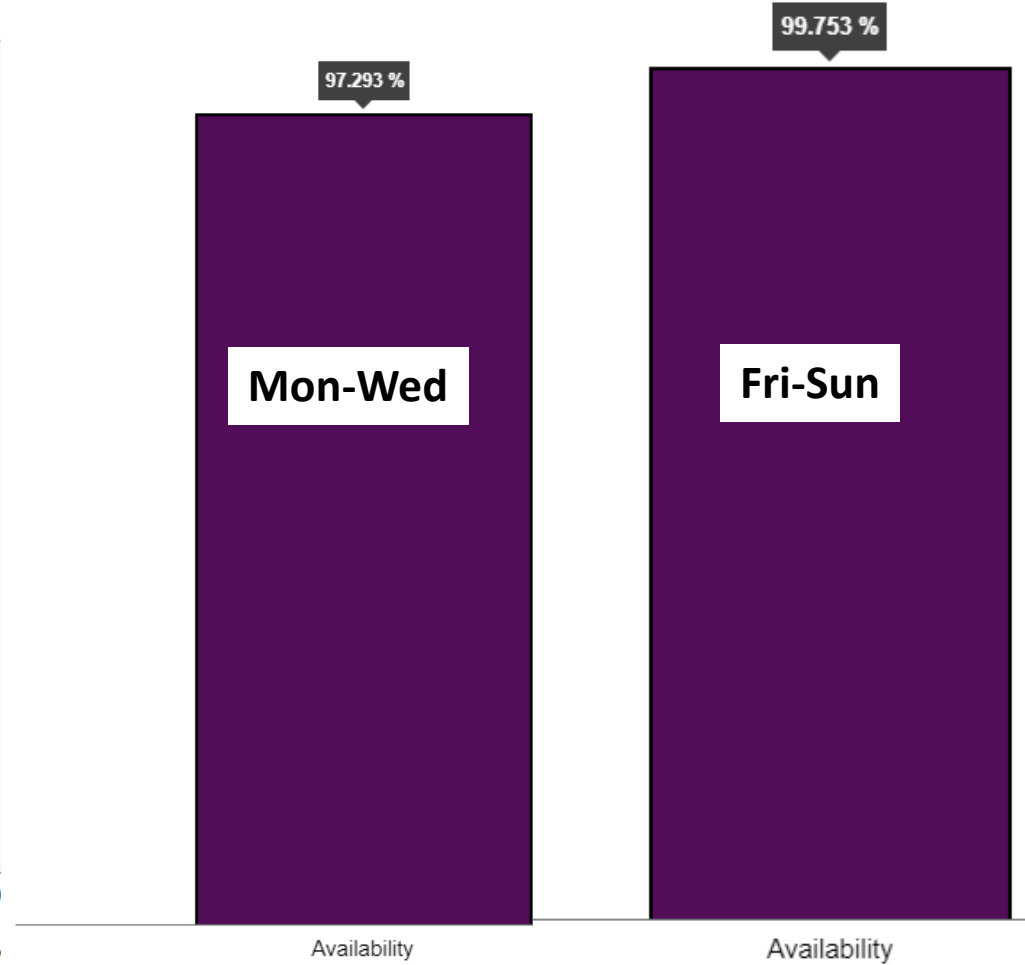
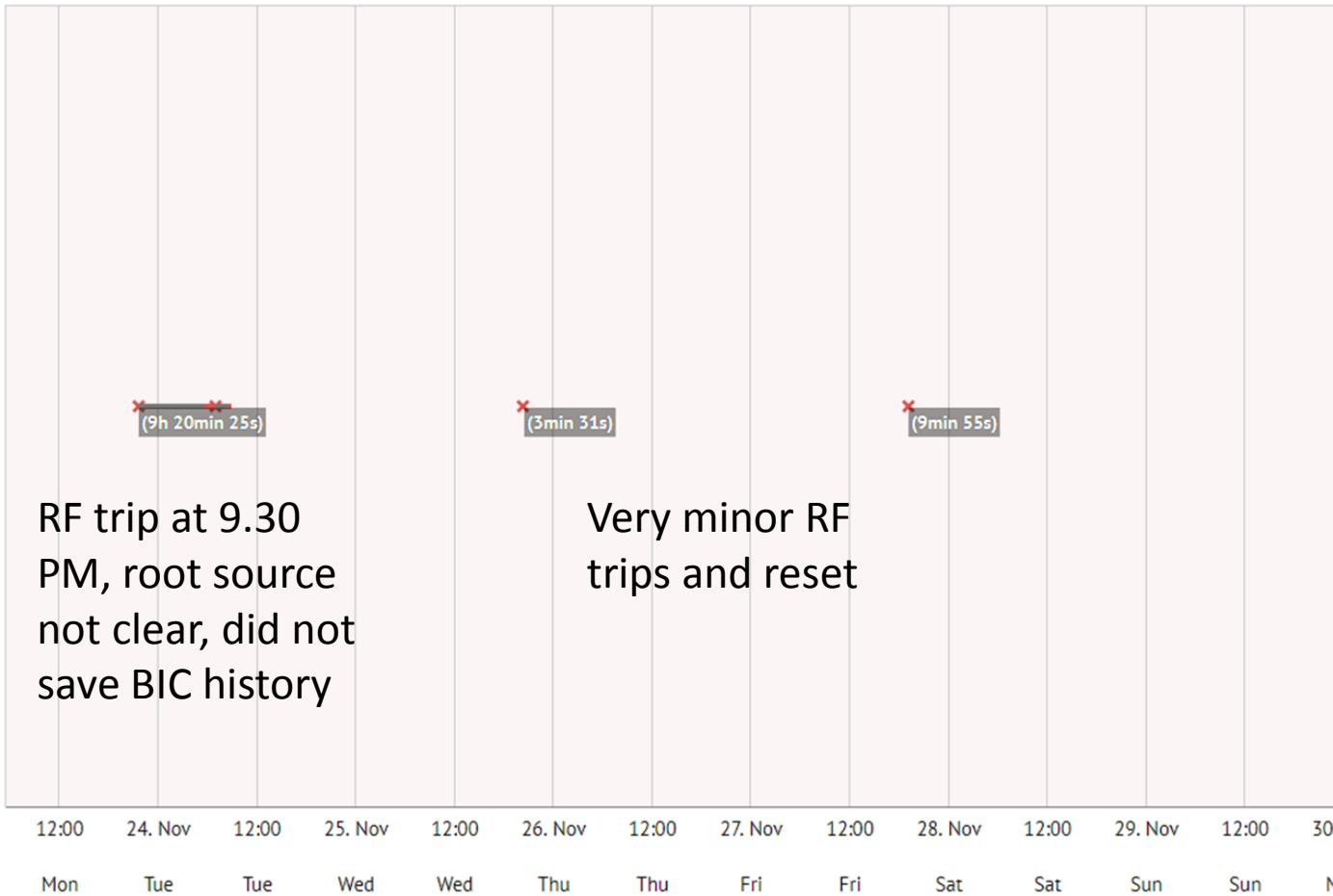
All this points out to wire heating, mitigated either by heating less (Cases 2 and 3) or cooling longer (Case 4)

~at this location: beam small in H and V during emittance meas.

Having a spare and doubting about wire integrity after many thermal cycles → decided to change it on Thu

Short Circuit (in vac) detected on Fri → changed again yesterday OK

Short term: new 'meas. Supercycle', reduced power during prof. meas.





This week



- Restart sending beam to LBE line
- Prepare for PSB injection!

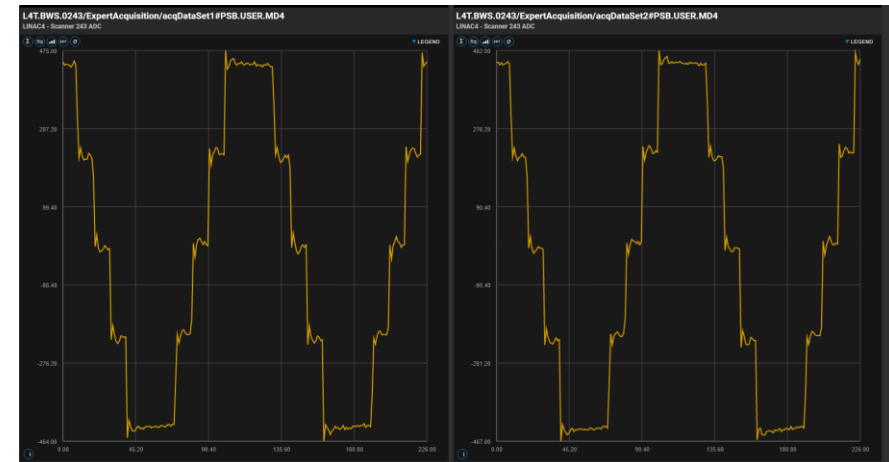


SPARE

L4T.BWS.0243

- On Thu: change 3 grids (1@L4T 0223 + 2@0243) + scanner
- Scanner
 - Acquisition and Movement tested in lab → OK
 - Acquisition tested at L4 before installation → OK
 - Movement tested after in installation → OK
 - Acq tested on Friday → not ok for one of the 2 wires...
- Monday (yesterday) access:
 - Identified short circuit, to be in vacuum side of cabling
 - Open vacuum
 - Confirmed short circuit, not easy to fix on the spot
 - After inspecting old scanner integrity, reinstall it → ok

Injected test signal, yesterday



Wires heating

Known to be a problem for grids at 160 MeV (by design, 100us sec SIS limit since L4 start)

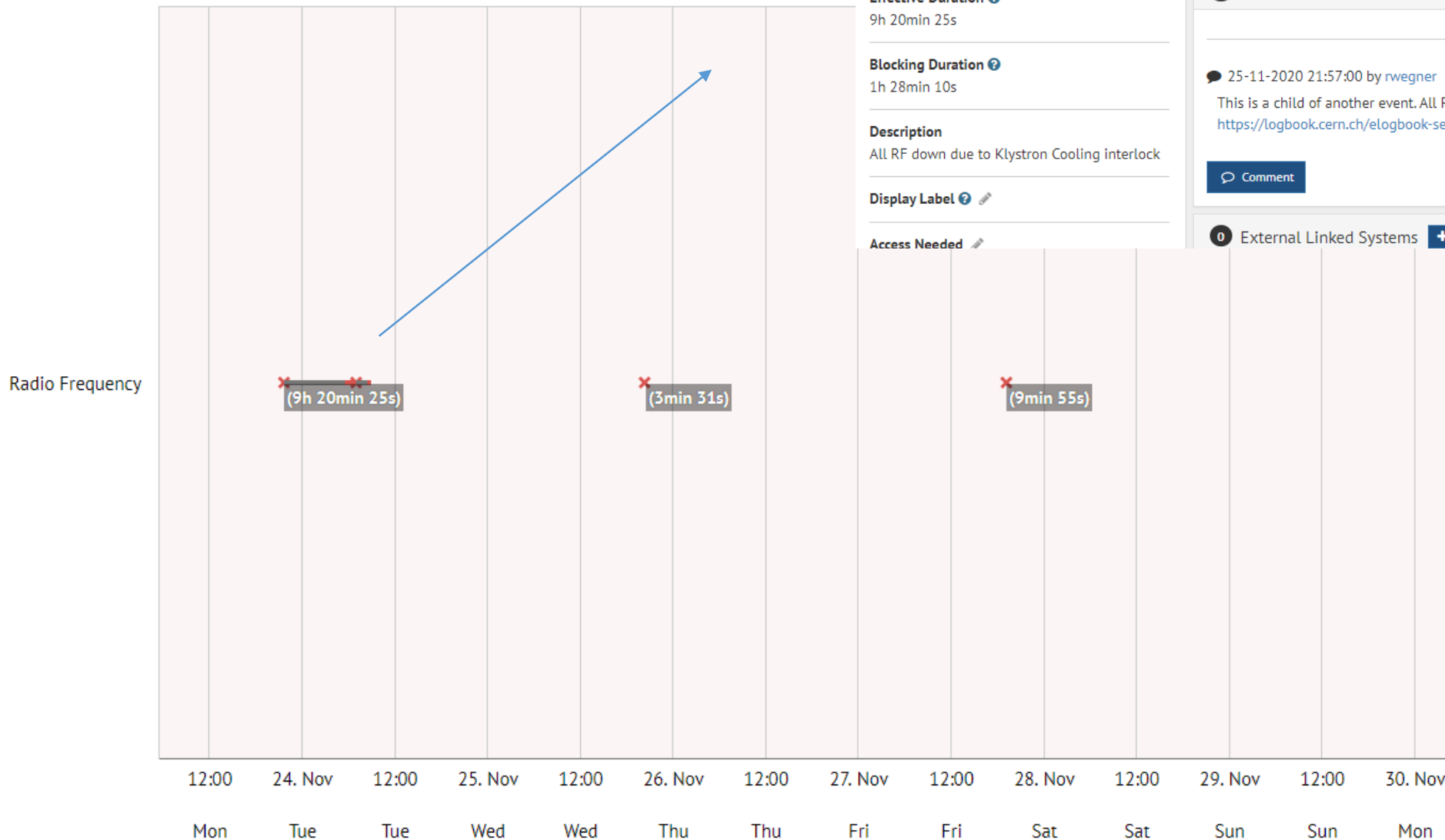
Observed for first time on scanner (less prone, wire stays at beam core 1 shot)



While BE-BI working on next system generation
 Short term: agreed to have special measurement supercycle(s):
 100us pulses interleaved with at least 3 zero cycles



AFT - Cardiogram



Basic Information

System

Radio Frequency » RF Power System » Klystron

Effective Duration

9h 20min 25s

Blocking Duration

1h 28min 10s

Description

All RF down due to Klystron Cooling interlock

Display Label

Access Needed

0 Faulty Elements

0 Relations

8 Activity

Comments Modification requests History

25-11-2020 21:57:00 by rwegner

This is a child of another event. All RF lines interlocked at the same time, 23.11.2020 at 21:38:40.
<https://logbook.cern.ch/elogbook-server/GET/showEventInLogbook/1916227>

Comment

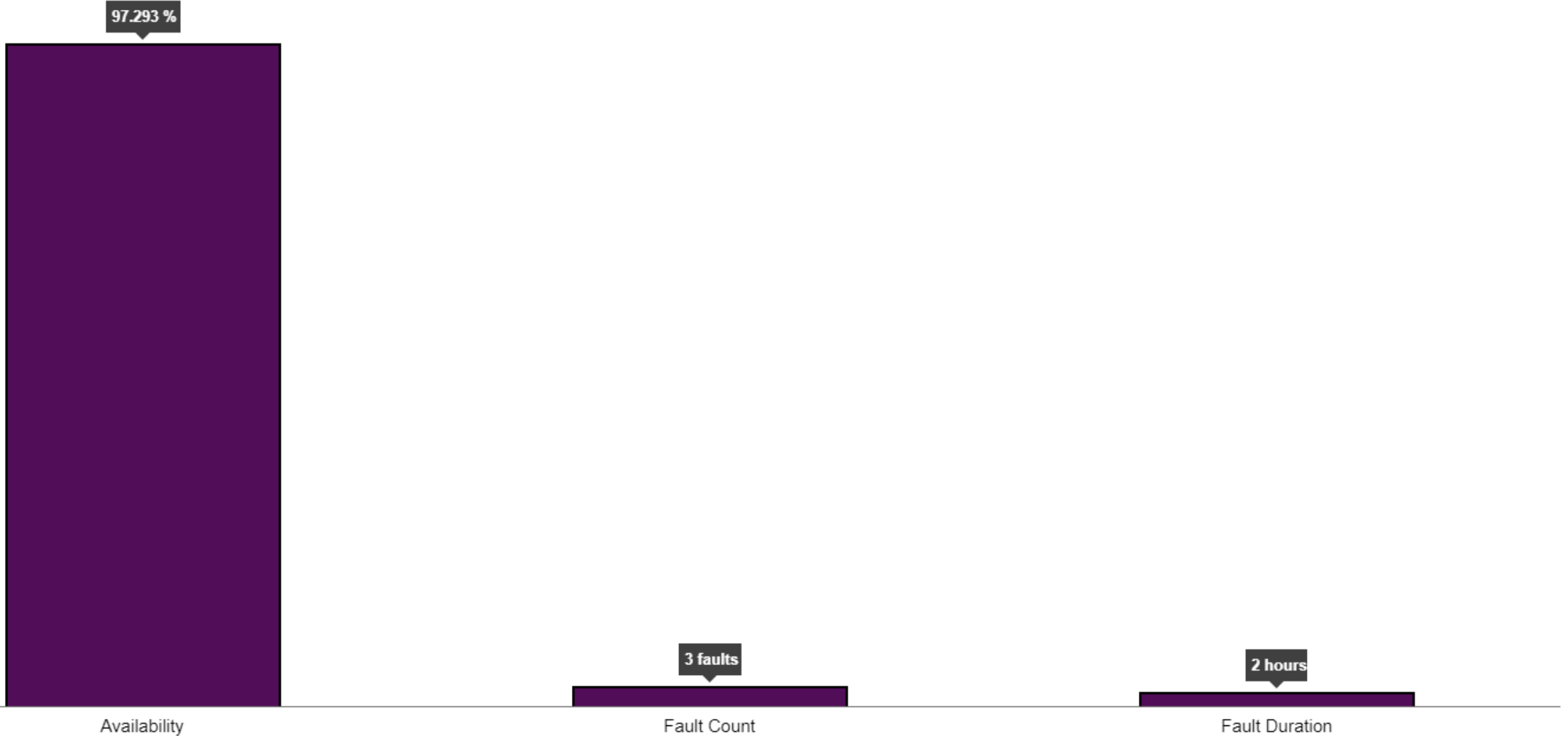
0 External Linked Systems

RF trip at 9.30 PM, root source not clear, did not save BIC history

AFT – statistics – Mon-Wed (before access)

Global Availability

● LINAC4



AFT – statistics – Fri-Sun (after access)

Global Availability

● LINAC4

