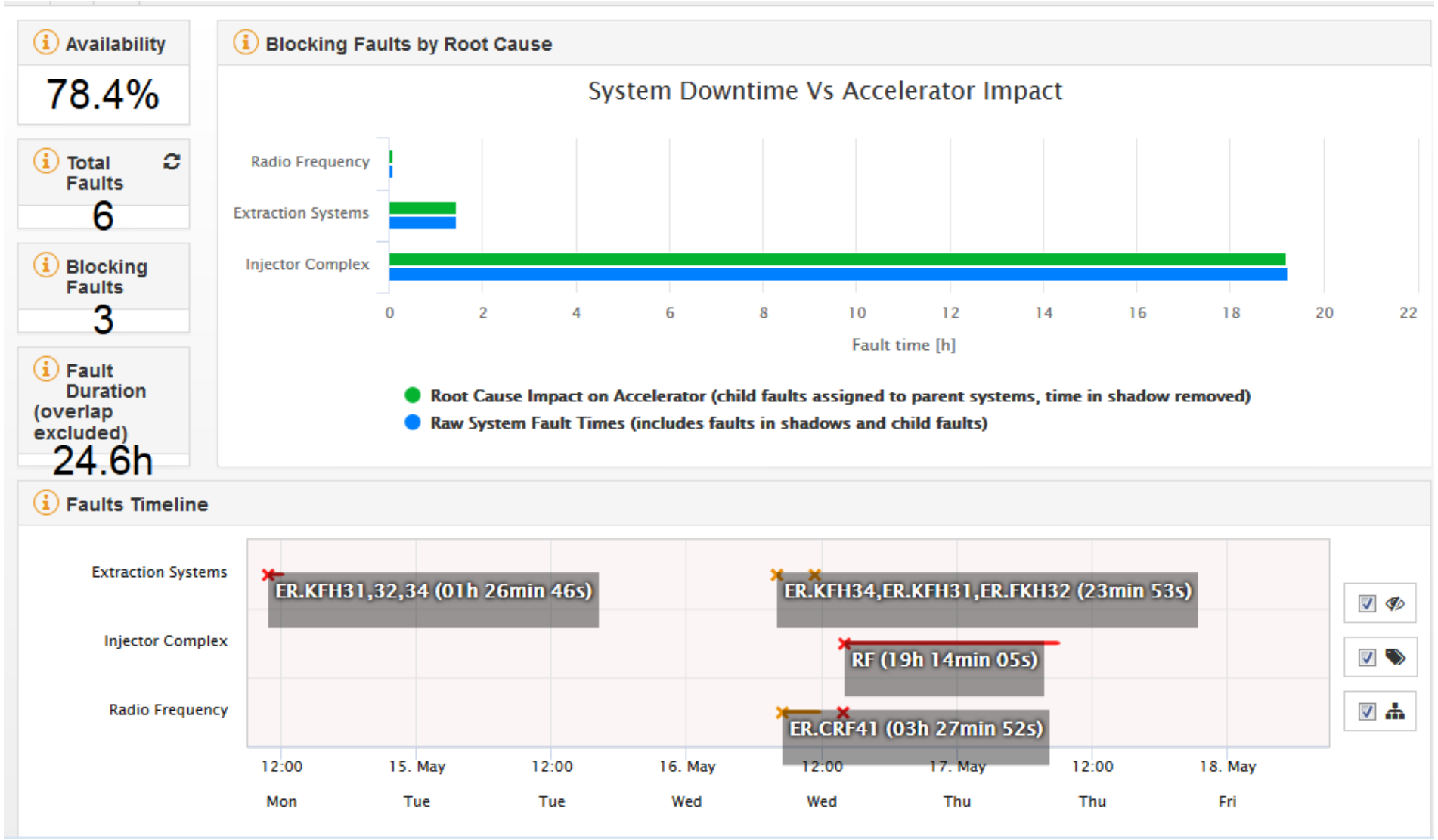
LEIR Overview

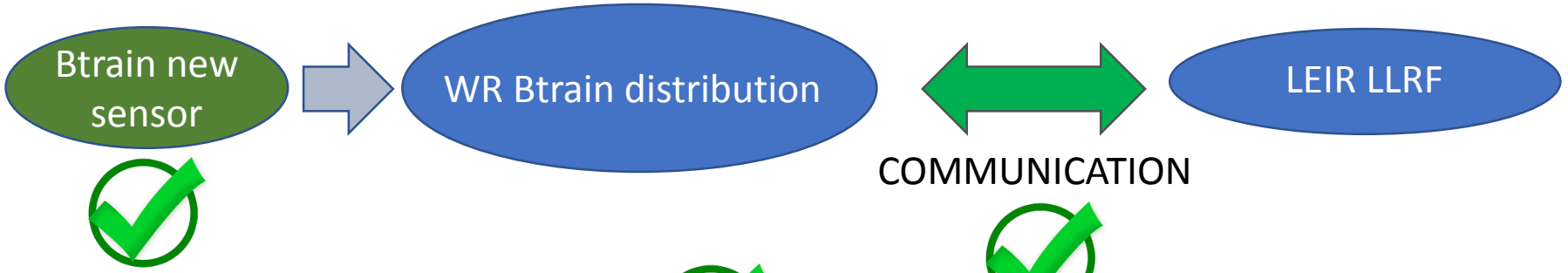
MSWG

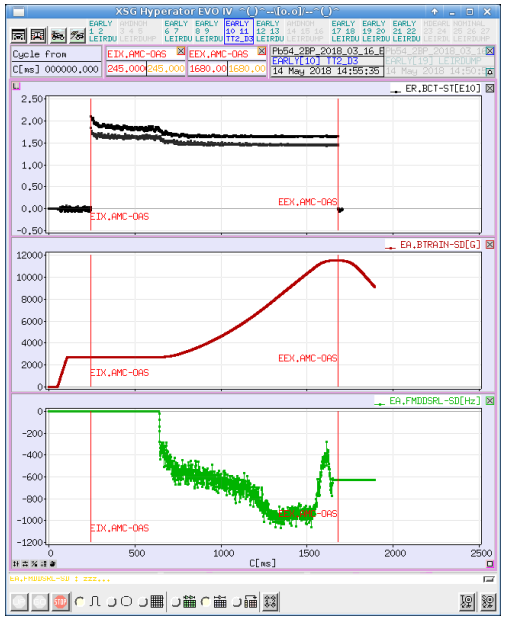
Availability overview Mo-now



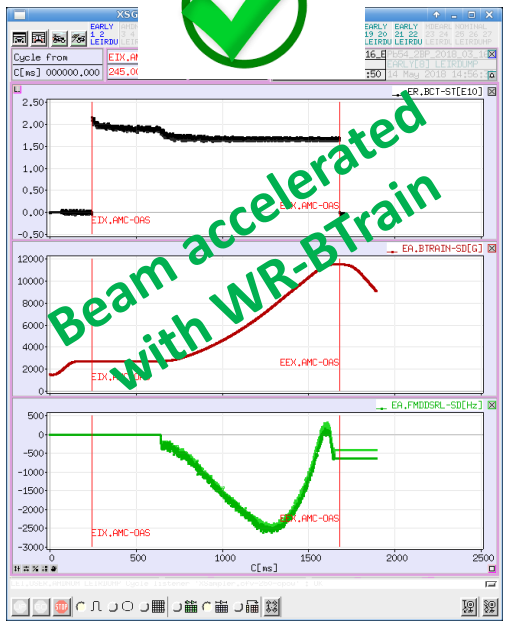
Excellent progress

LEIR WhiteRabit-BTrain





Bup-down Btrain



WR Btrain

- The radial loop contribution was higher with the WR-based Btrain (-2.5 kHz instead of - 1 kHz) which indicates a difference in the measured value.
- **Transmitted intensity ➔ the same**
- To be done: study longitudinal behaviour

LEIR LLRF team + Btrain team

R. Alemany

NOMINAL BEAM

- LEIR LLRF:
  - found that the extraction synchro gain & phase loop settings was too high for the beam
  - decreased it and optimised a bit the capture process
  - now the **beam is synchronised and extracted properly** 🡐 pending issue from last week

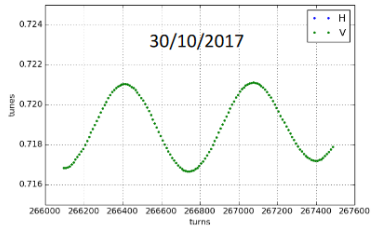
LEIR LLRF team

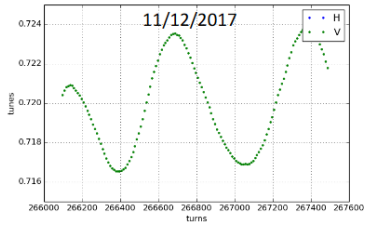
- **Source of intensity limitation found**
  - inherited **pole face winding sextupole from LEAR** (winded to the main dipoles) which always had ZERO settings, but regulating continuously the induced voltage from the main dipole 🡒 **~ 550 Hz spurious frequency affecting the beam**
  - Effect: tune modulation →

Significant tune ripple measured in LEIR:

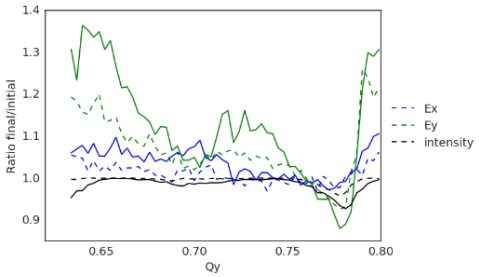
- frequency of ~550 Hz
- peak-to-peak amplitude ~0.004 (meas. October)
- peak-to-peak amplitude ~0.007 (meas. December)

2017 measurements





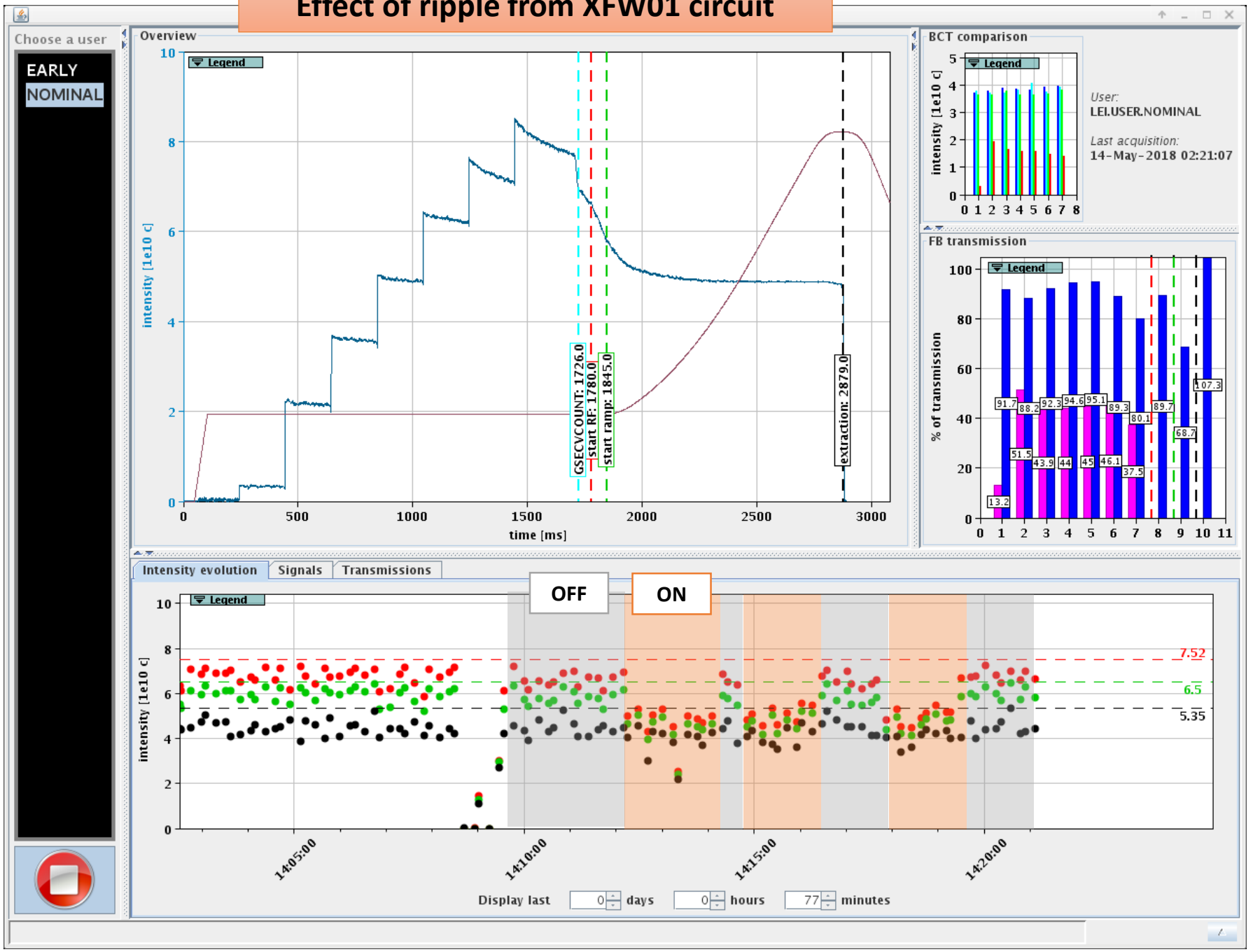
According to simulations losses and emittance blow-up increase when tune ripple is also implemented



LEIR Meeting, 16th January 2018

R. Alemany

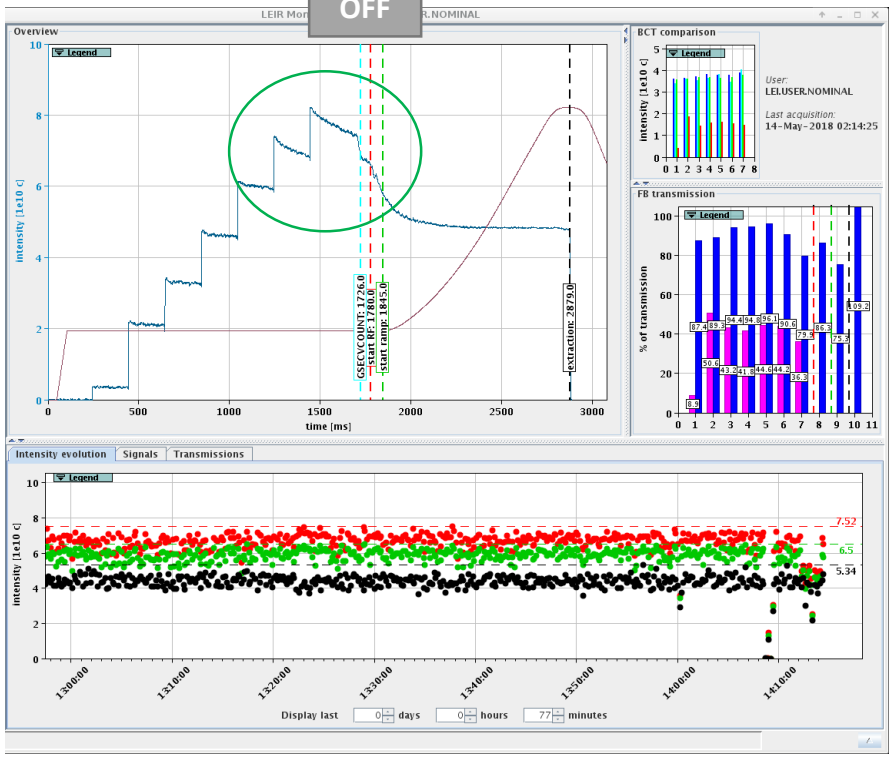
Effect of ripple from XFW01 circuit



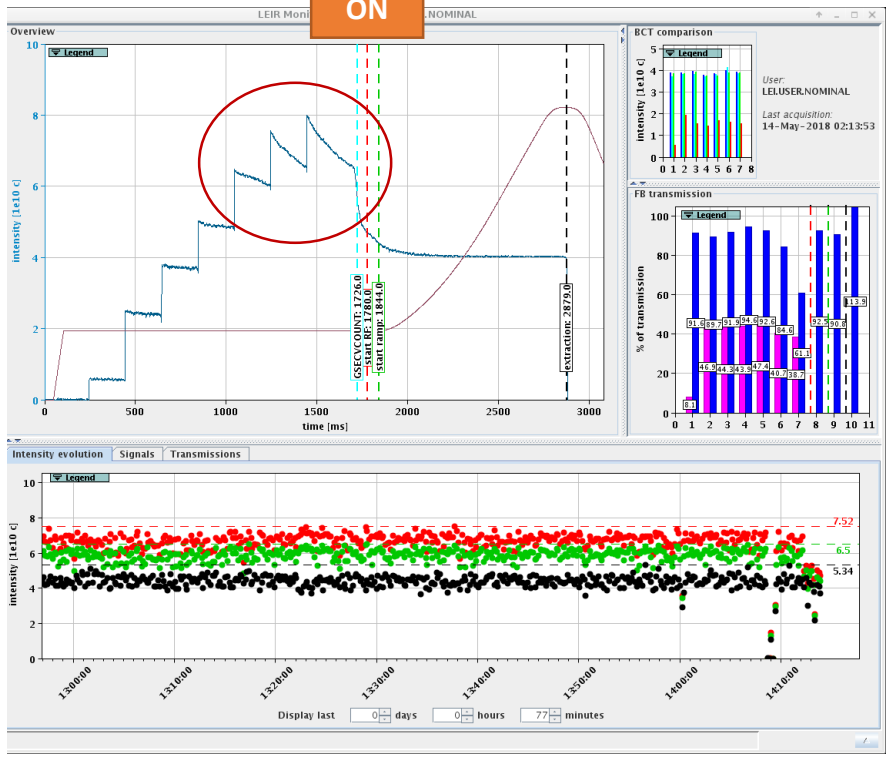
N. Biancacci

Effect of ripple from XFW01 circuit

OFF



ON

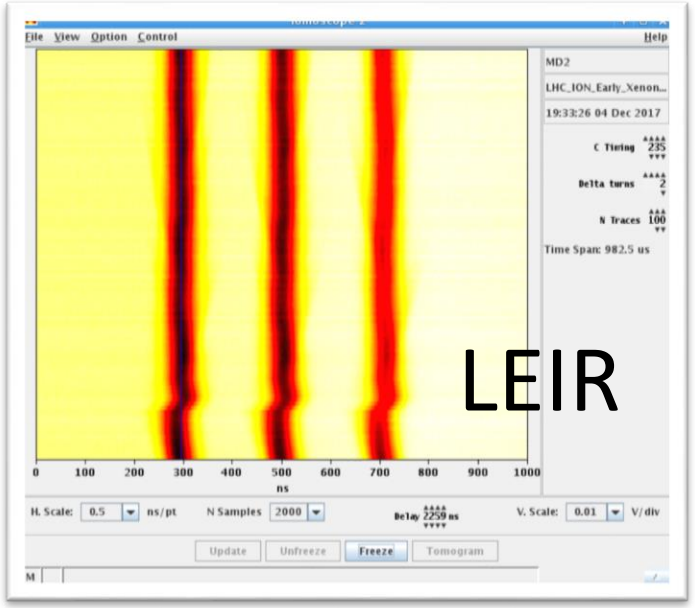


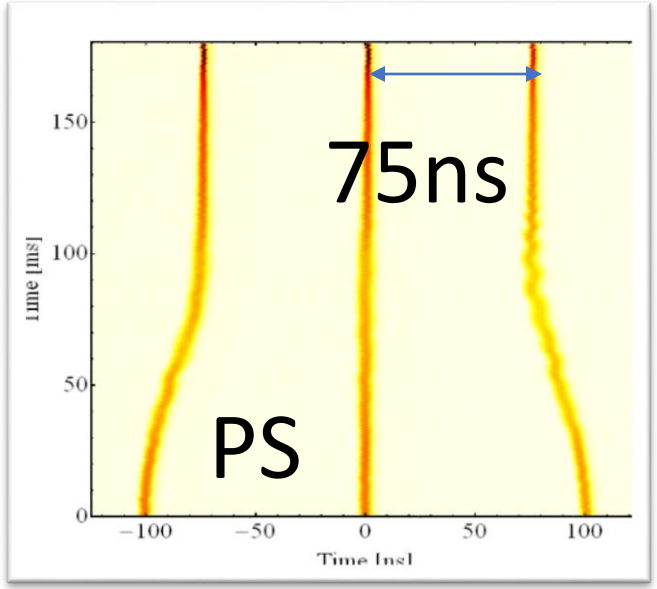
We checked in 2015 and 2016 the circuit was most of the time ON
NOW it is permanently OFF

R. Alemany

Studies this week 1

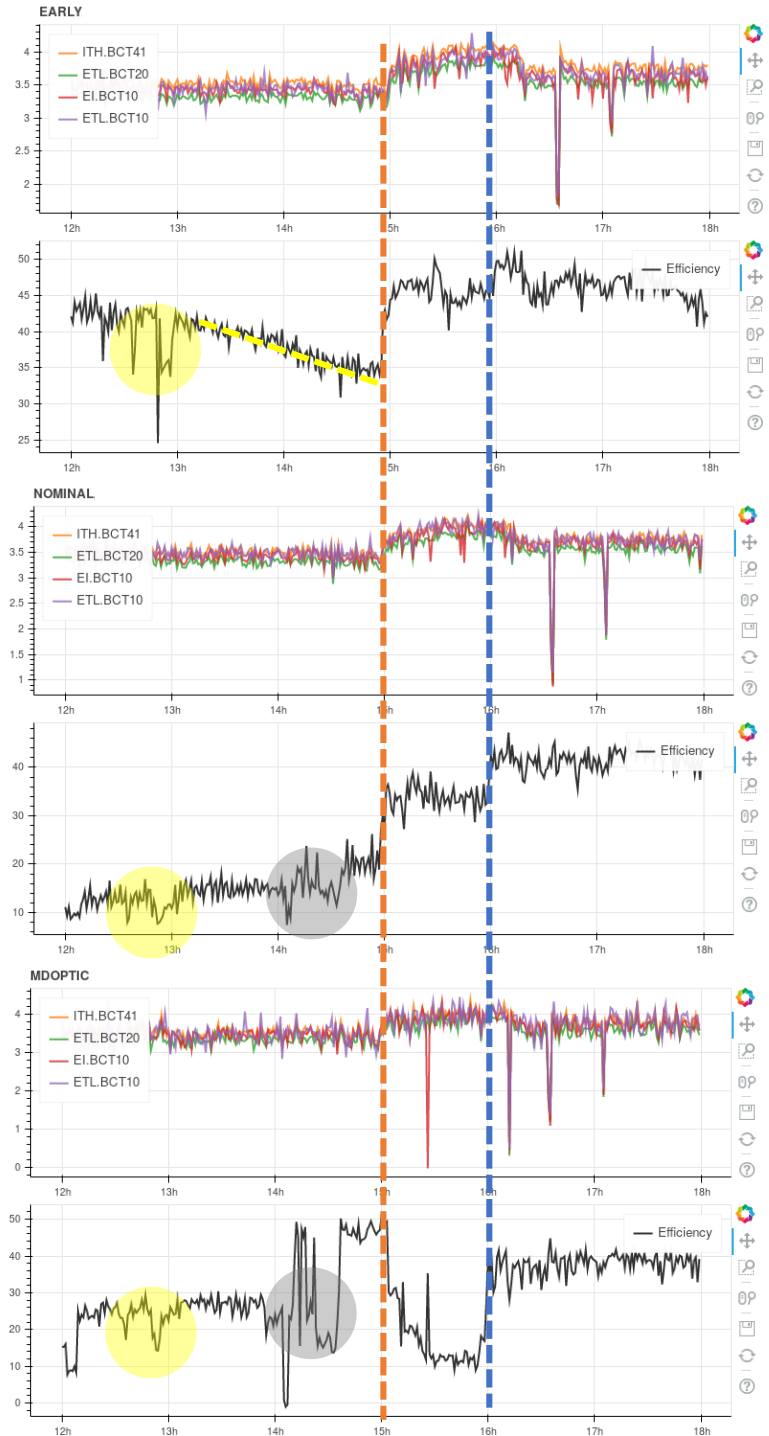
- **Continuous beam commissioning of the NEW Transfer Line INJECTION BPMs**
  - As last year, saturation of the electrodes! - ongoing
- Continue improving the NOMINAL beam
- **Try to get ready the h=3+6** ➔ three bunches 75 ns in PS since this morning





R. Alemany

Studies this week 2



@13, worsening for all users: source not clear.

@13-15, EARLY drops linearly down.

@14-14:30, MDOPTIC plays on ETL.BHN10, affects also NOMINAL.

@15, source intensity increase:

- better efficiency in NOMINAL, EARLY
- Worse in MDOPTIC

Linac3 intensity variation -> mean energy variation?

@16, MDOPTIC copies NOMINAL setting:

- Global improvement for all the users.

Mainly touched ETL.BHN10 function: is it affecting everyone?

N. Biancacci

Automatic Optimization:

Studies this week 3

- Single optimization (line search)
- Multi-parameter optimization (powell)
- GUIs for operation