

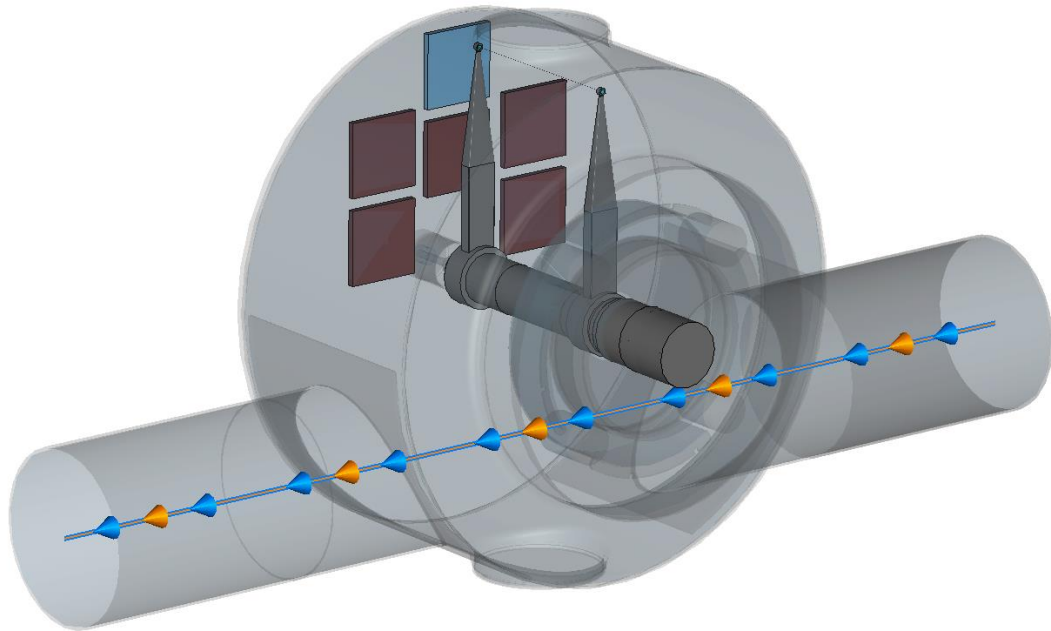
AOB: Stuck SPS BWS 51638H

Impedance and power loss studies

Leo, Elena, Carlo, Benoit

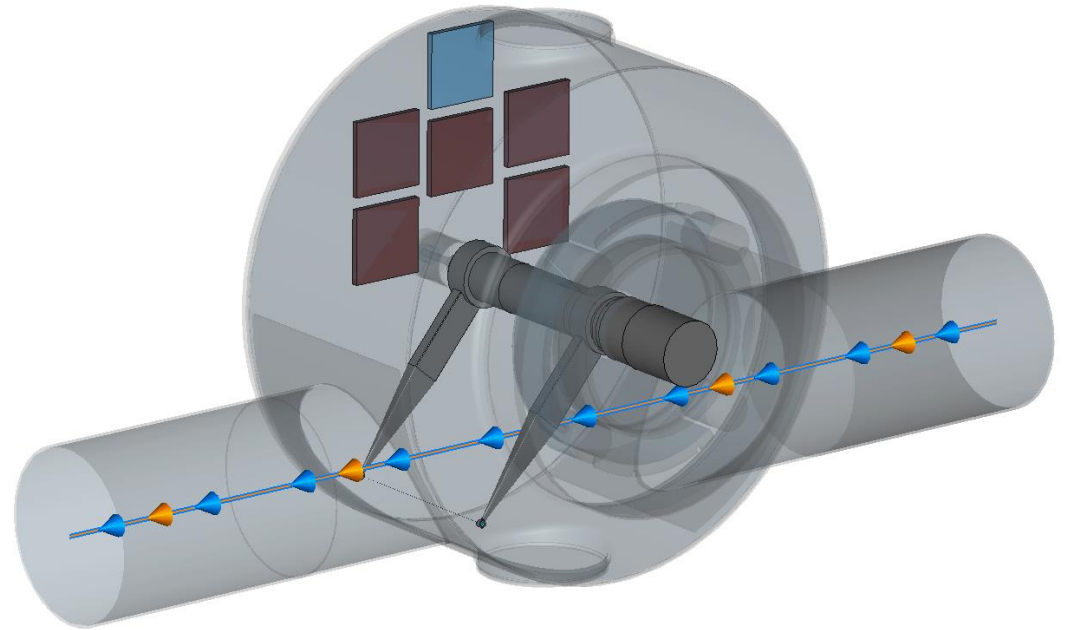
Stuck position

Parking position

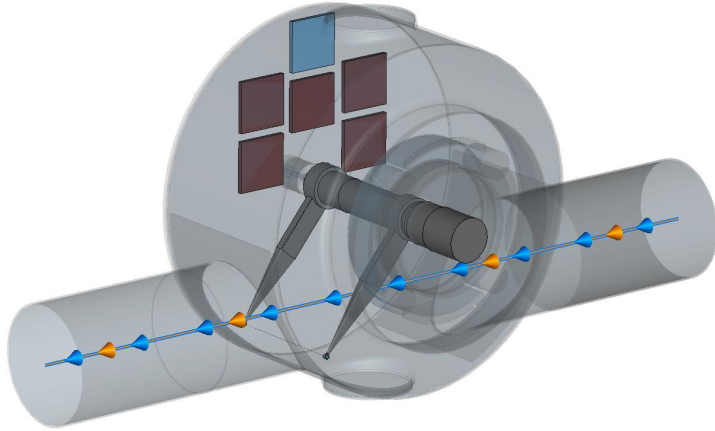


51638H Stuck configuration since 17/07

- 2.3 rad from parking
- Very close to beam halo

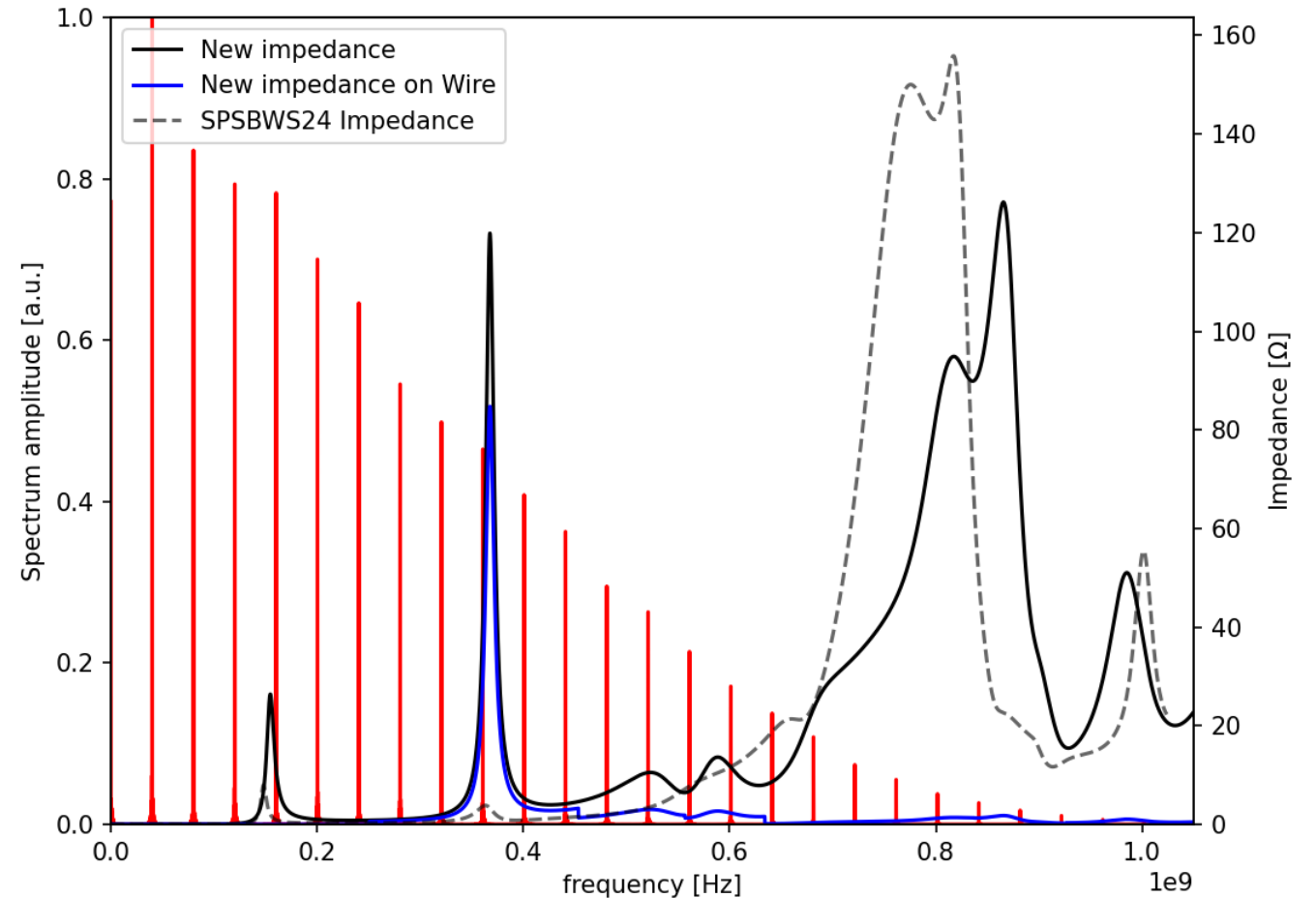


Impedance



Stuck configuration gives **new impedance curve** with a strong resonance @380 MHz, dissipating >70% of power on the wire

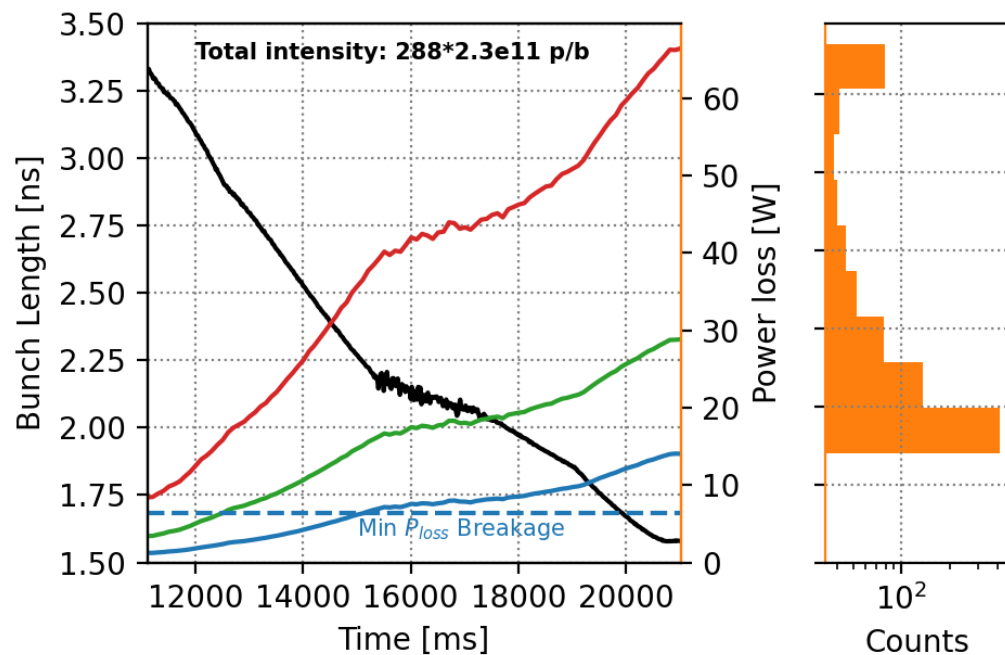
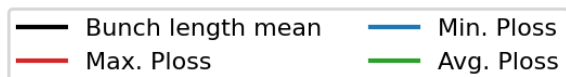
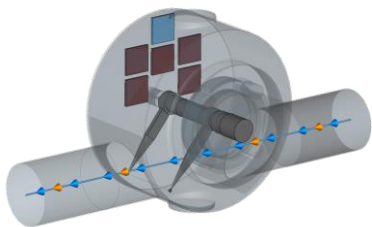
Power loss | SPSBWS(2024) stuck at 2.3rad | on Wire



Power loss for LIU beam 4x72b 2.3e11 p/b

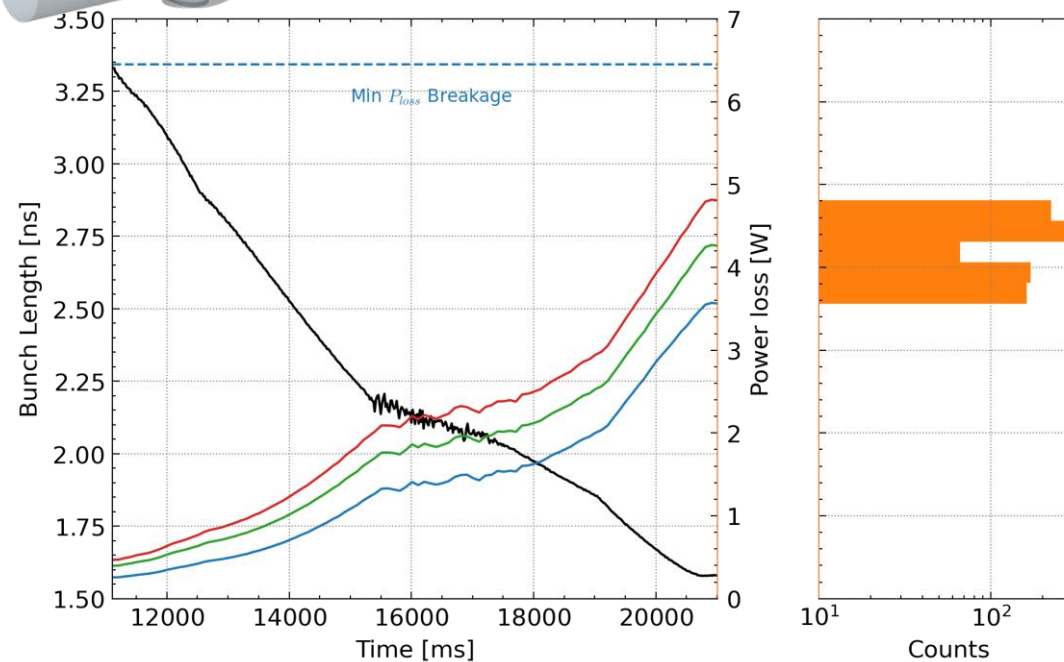
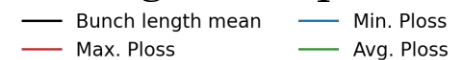
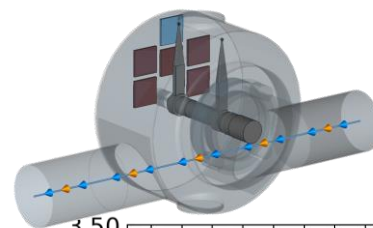
Stuck BWS

- **x13 ploss** worst case
- Minimum above breakage limit



The other BWS

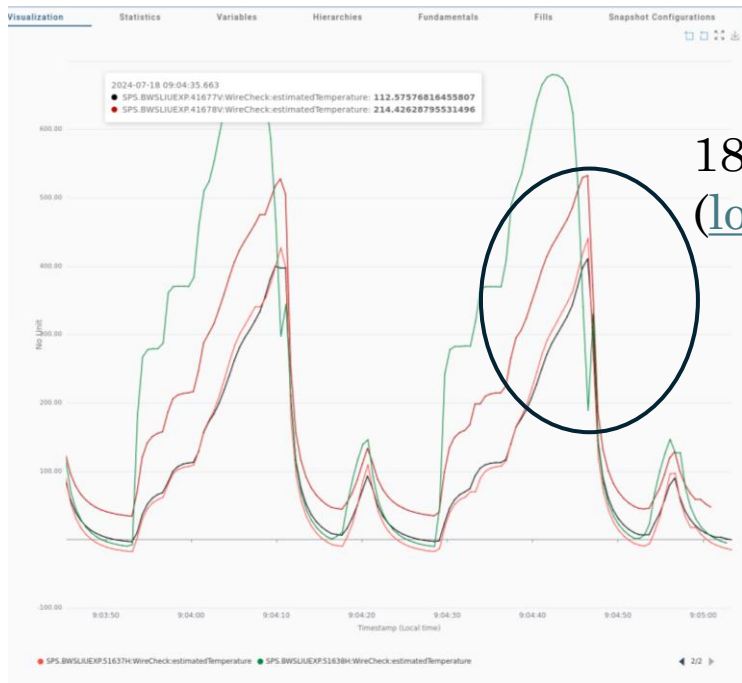
- All good as presented last year



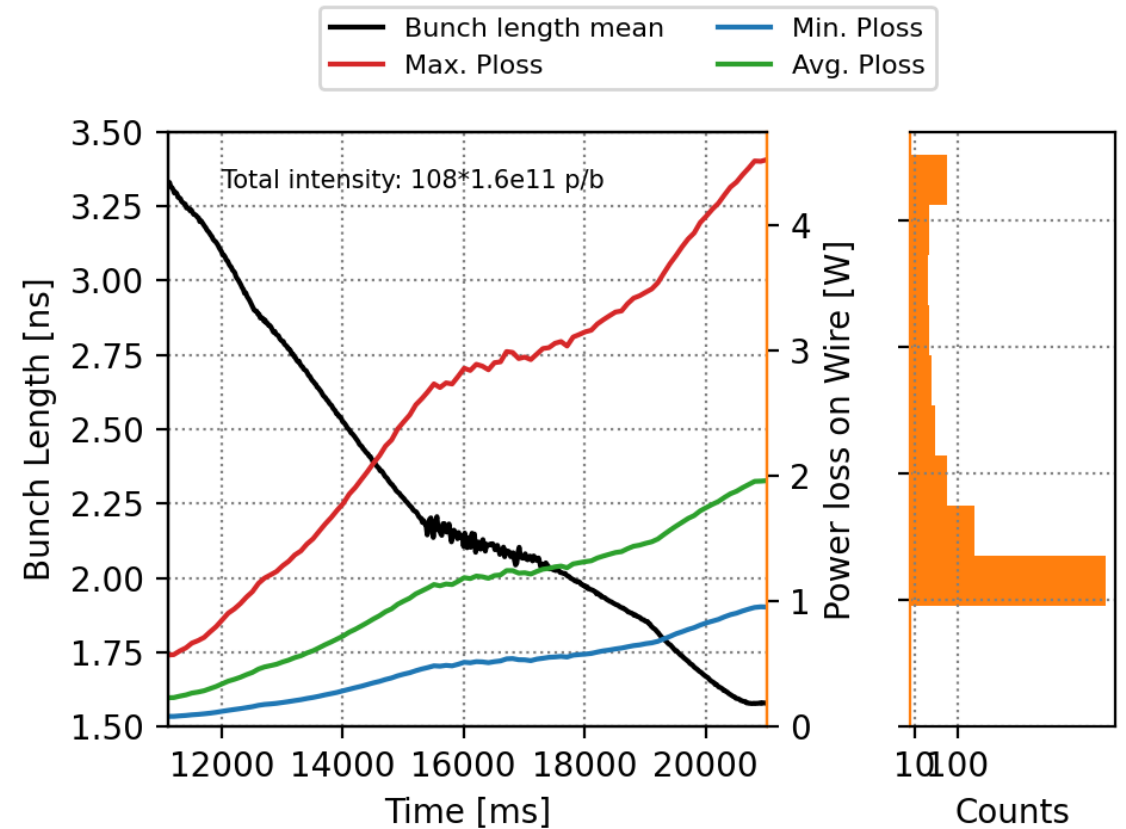
Observations for operational beam

3x36b 1.6e11 p/b

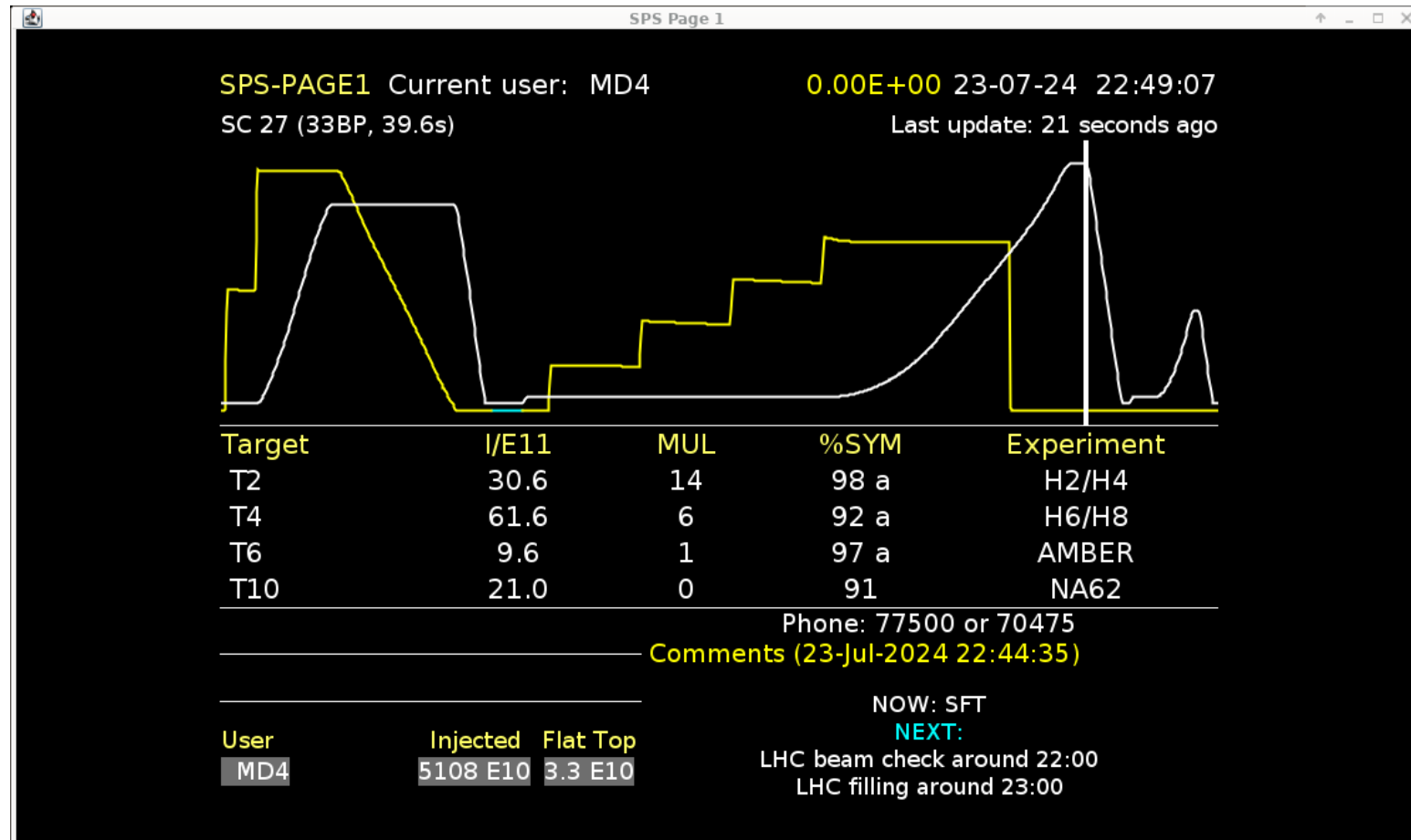
Hints of thermionic emission in 51638H temperature and voltage readings



4.5 W at FT, reasonably close to 6.5 breakage limit



Breakage 23/07 ~22:45h



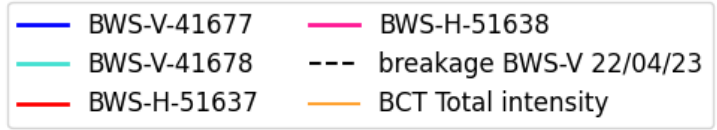
Full 4x72b 1.7e11 p/b
was taken 1st time
since 17/07

2.5x total intensity
compared to
operational beam
3x36

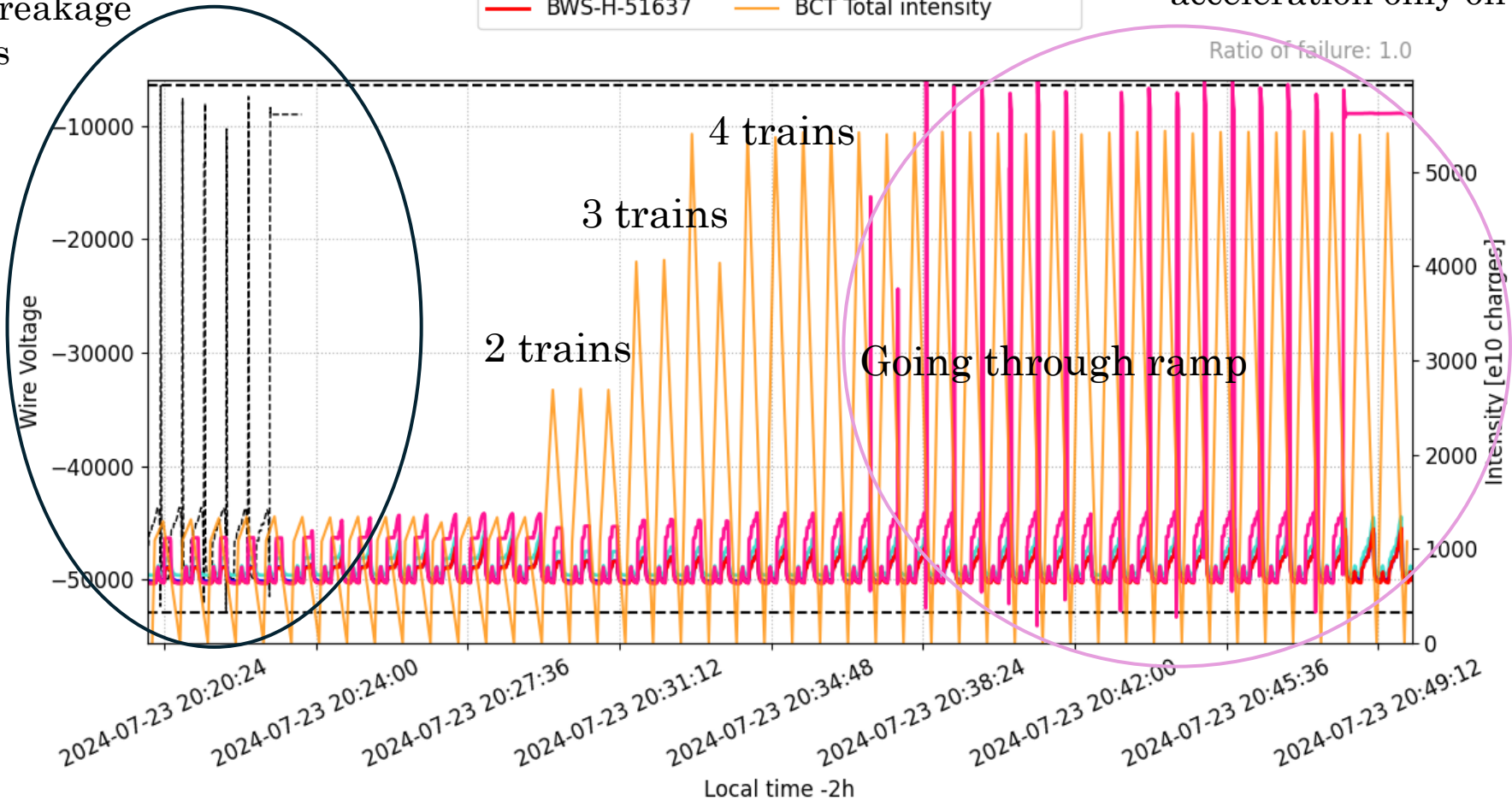
Breakage expected

Breakage 23/07 ~22:45h

Comparison with last year's
(22/04/2023) breakage
voltage signals



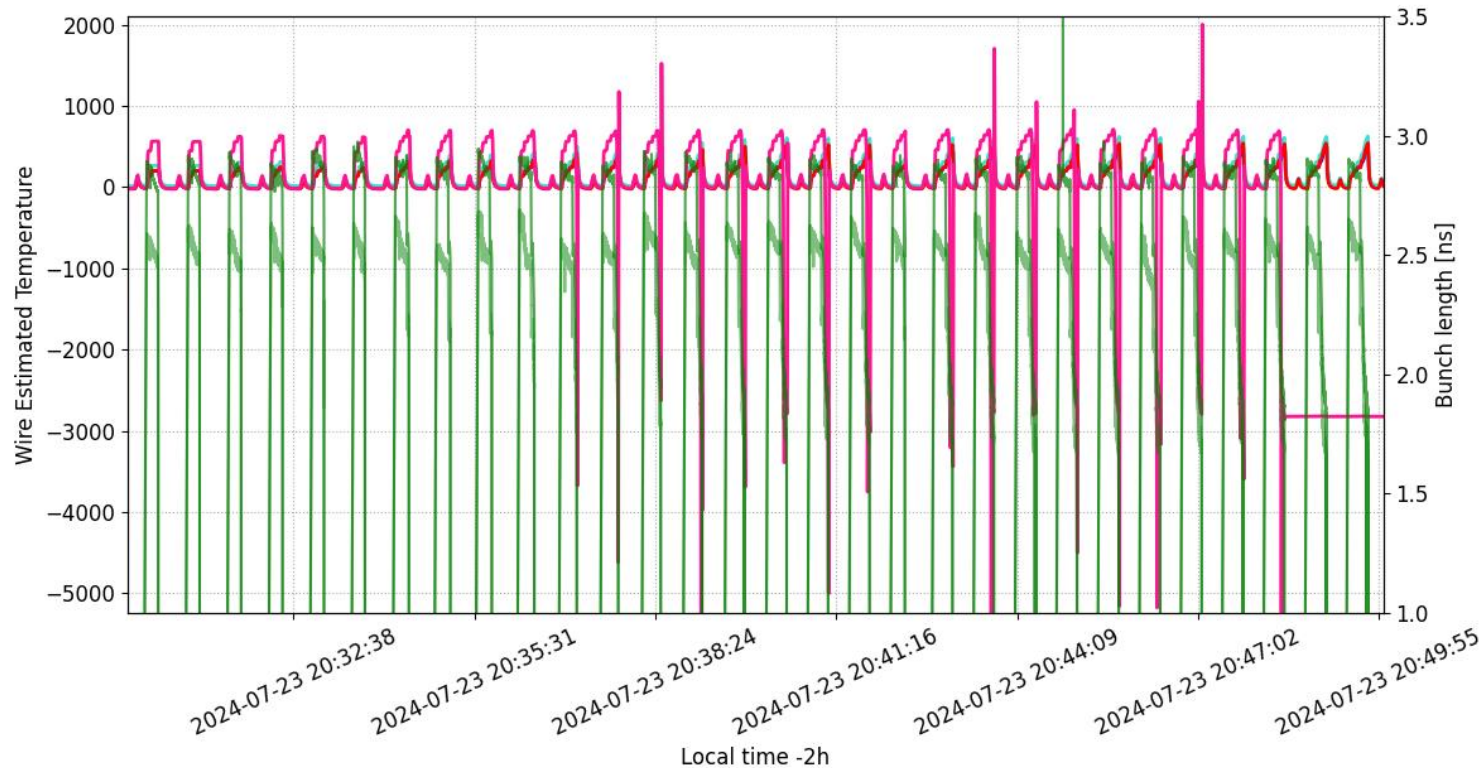
Same behavior observed
when 4x72b started
acceleration only on 51638H



Extra

Breakage temperature signal

SPS BWS Wire heating | Dump Bunch intensity: 1.72 e11 p/b



Negative temperatures
Could be explained by this
thermionic effect

With operational beam 3x36b 1.6e11

SPS BWS Wire heating | Dump Bunch intensity: 0.63 e11 p/b

