SPS W38/39

Availability

86.9%

Blocking Faults

88

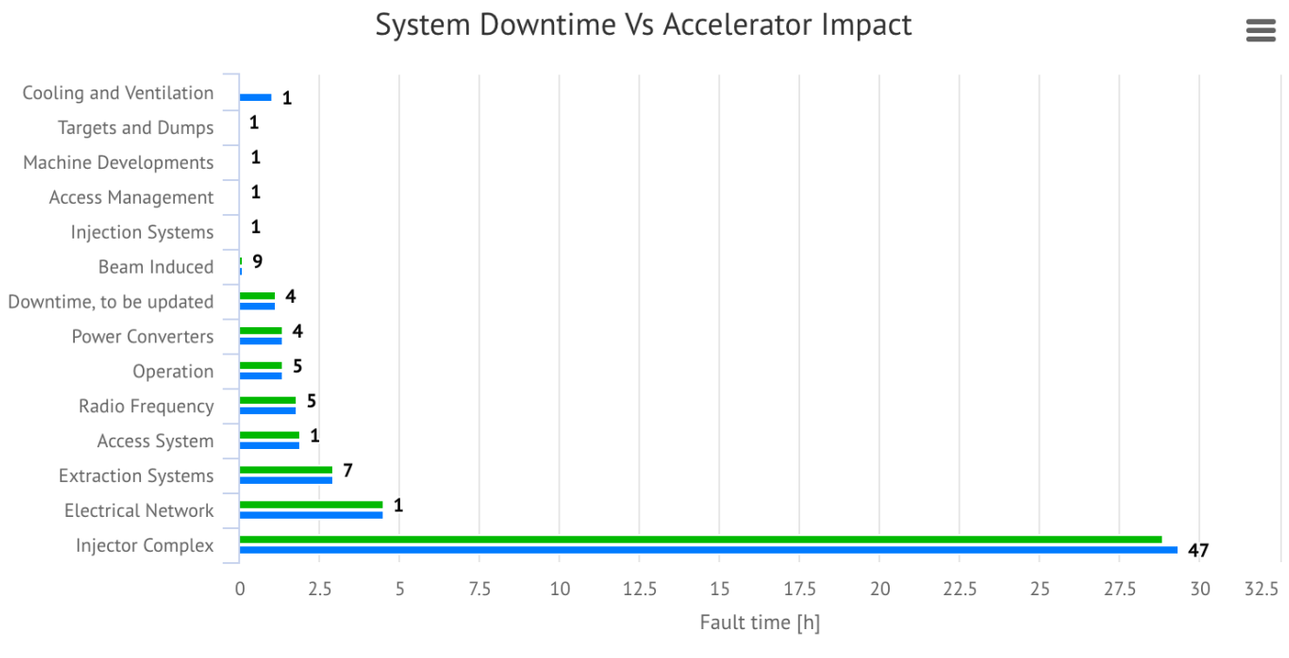
Total Faults

88

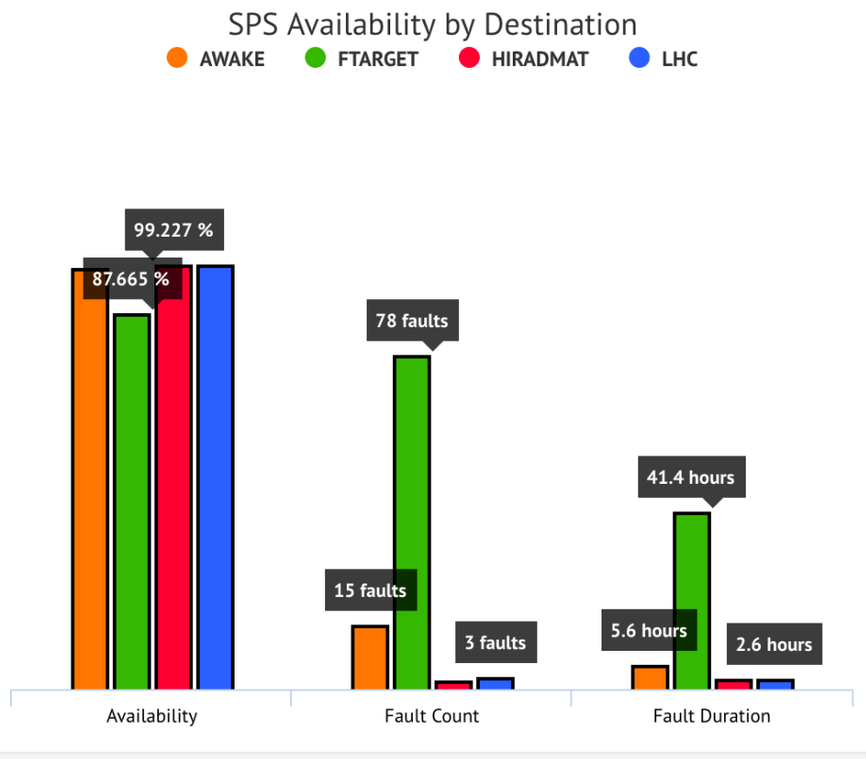
Fault Duration (overlap excluded)

44.1h

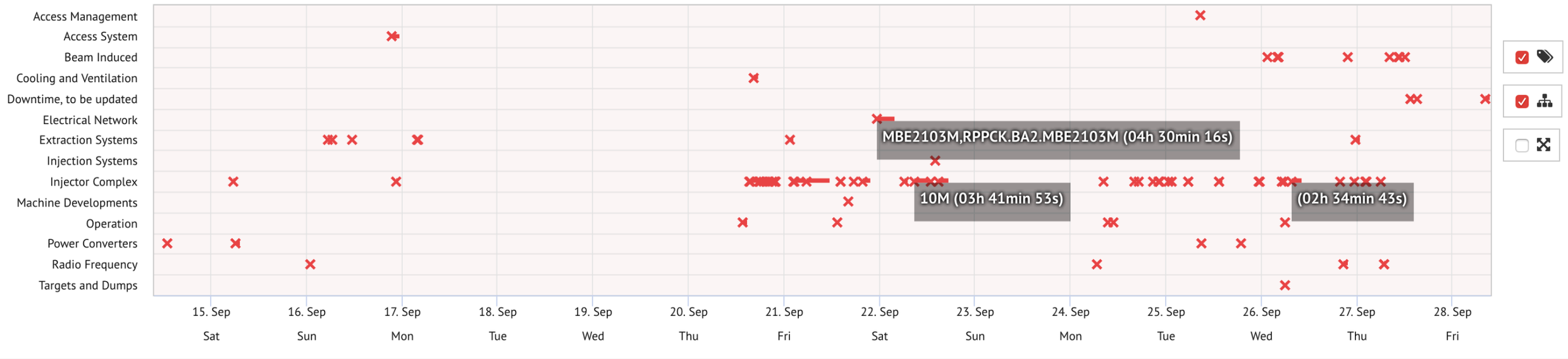
Blocking Faults by Root Cause



Destination Availability



Faults Timeline



SPS W38/39

→ UA9 run before TS

→ 1.5 days of TS

- ↳ Crystal installed in LSS2 for test of loss reduction => ZS shadowing
- ↳ Installation of new vacuum chambers to try to reduce the momentum aperture limitation
- ↳ Octupoles reconfiguration to reduce the induced second order chroma on Q20

→ 24h COLDEX after TS

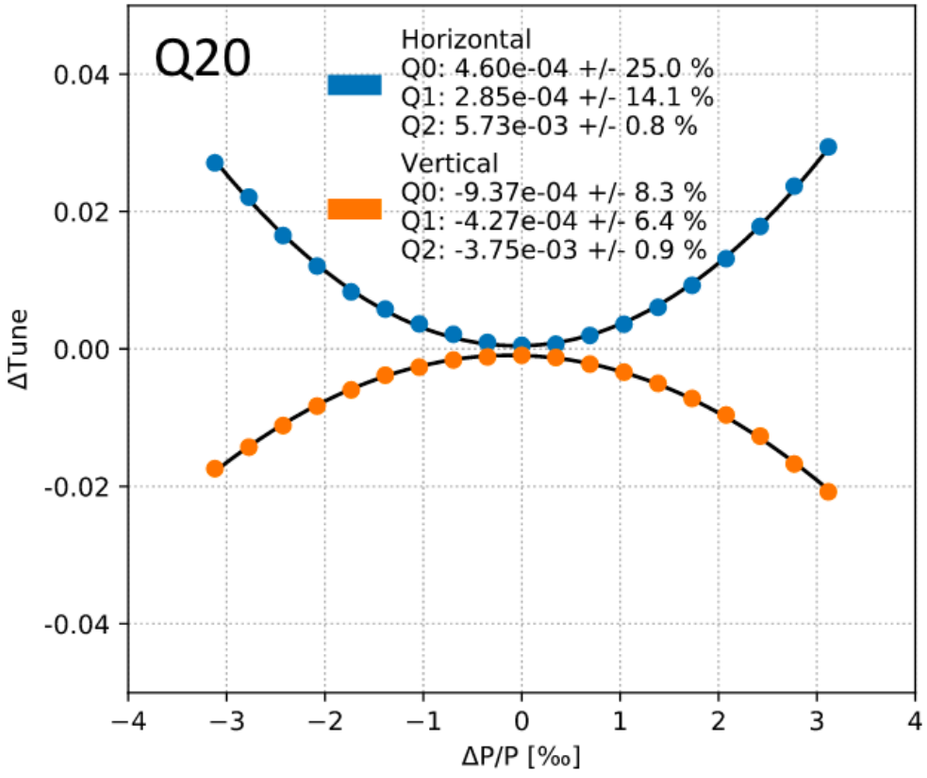
→ Back in physics Thursday this week

Octupoles reconfiguration

New octupole powering scheme

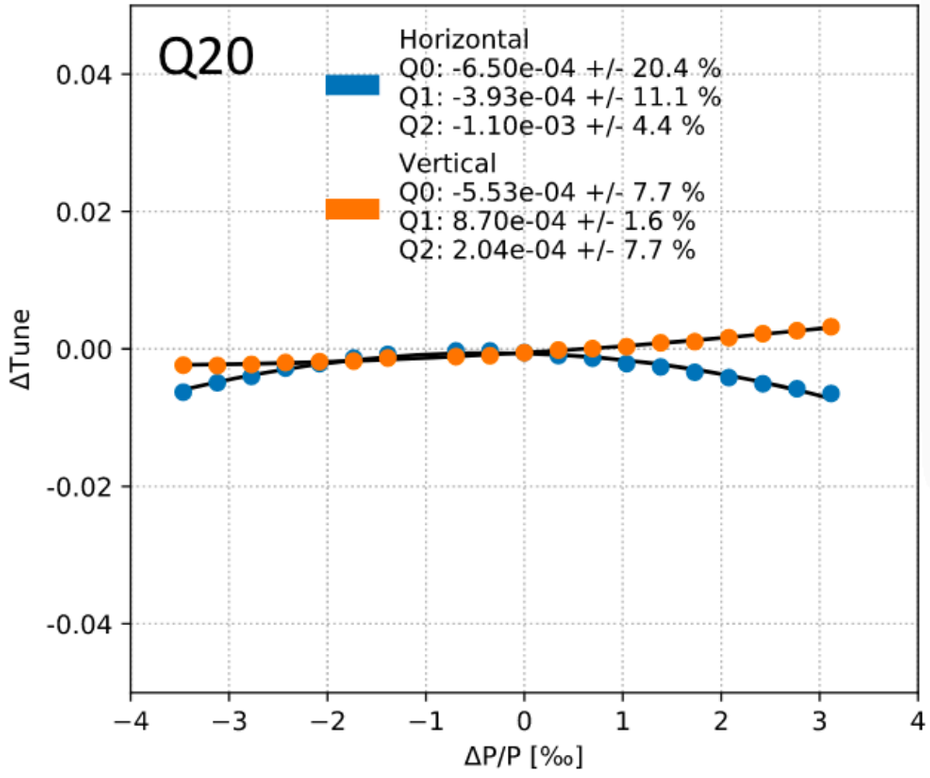
- Reconfiguration of existing Landau octupoles to minimize induced second order chromaticity Q'' in Q20 optics (which creates incoherent losses)
- **Reduced Q'' confirmed → will allow using octupoles for stabilization of transverse instabilities with LHC beams without generating losses**

old scheme (KLOF = 2 / KLOD = 2)



reconfiguration

new scheme (KLOF = 3 / KLOD = 3)



Main highlights - SFTPRO

→ **Now running with the highest intensity per pule for SFTPRO in this year => 3.3x10¹³ ppp**

→ **Switched from old slow extraction methodology to Constant Optics Slow Extraction (COSE)**

↳ From tune sweep to momentum sweep => this has the potential to reduce losses, but not proved yet with measurements

→ **Dedicated MD(s) devoted to slow extraction and FT studies:**

↳ 1/3 order resonance slow extraction assisted with octuples

- Aim: loss reduction. Principle of working demonstrated

↳ Beam Dump Facility (BDF) target test

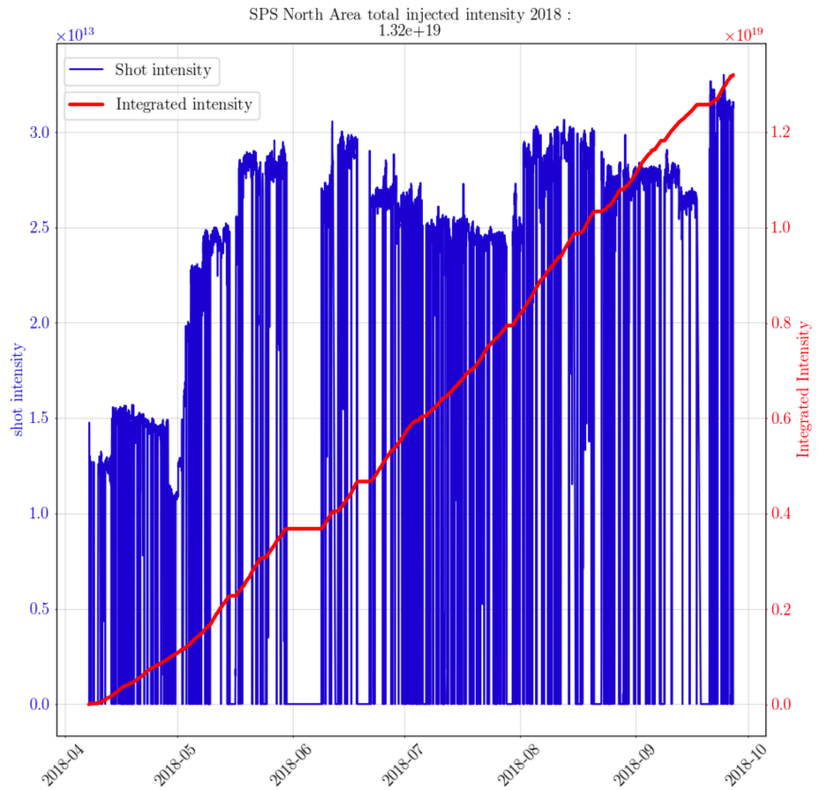
- Aim: test target design. Setting up of the cycle and line steering started but not completed yet - very tedious to steer TT20…as usual…and even more in these conditions

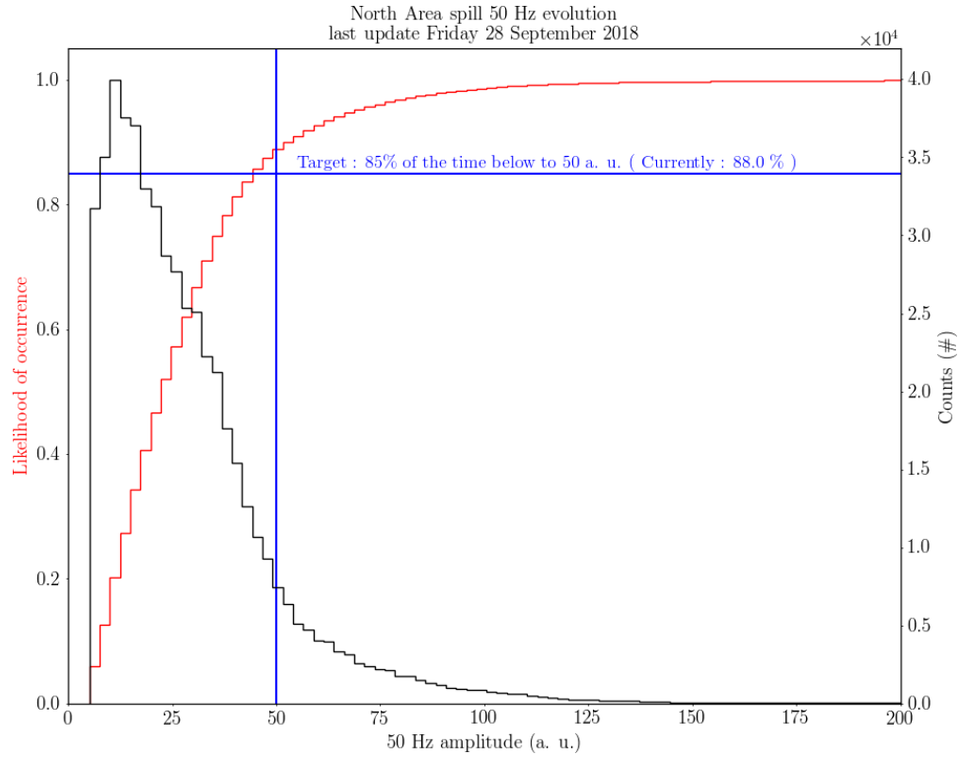
↳ ZS shadowing using bent crystals

- Aim: loss reduction. This has the potential to improve what has been shown already with a passive diffuser. First scans started and hit of channelling already observed - very promising in view of the upcoming MD slots

↳ Spill noise correction using machine quadrupoles

- Aim: spill quality optimisation. Used specially prepared





Main highlights - SFTPRO

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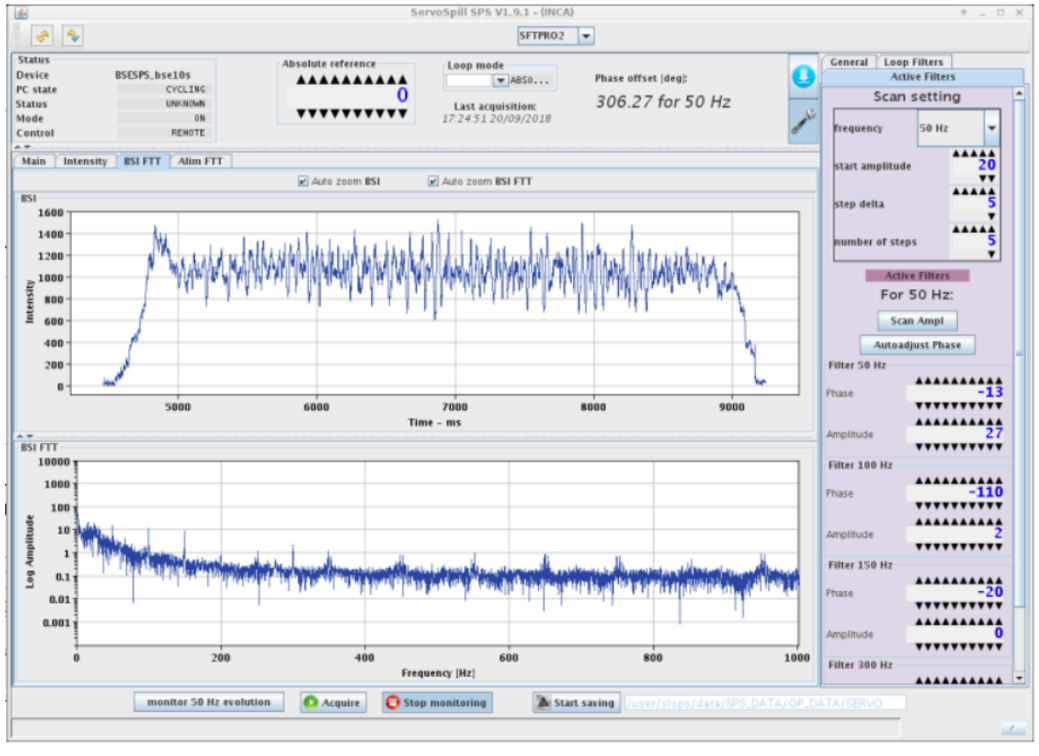

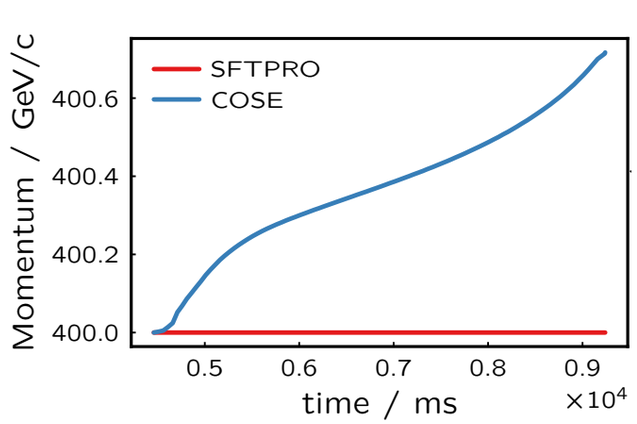

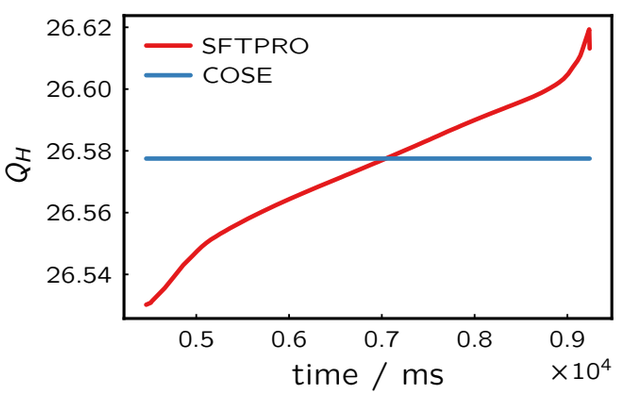

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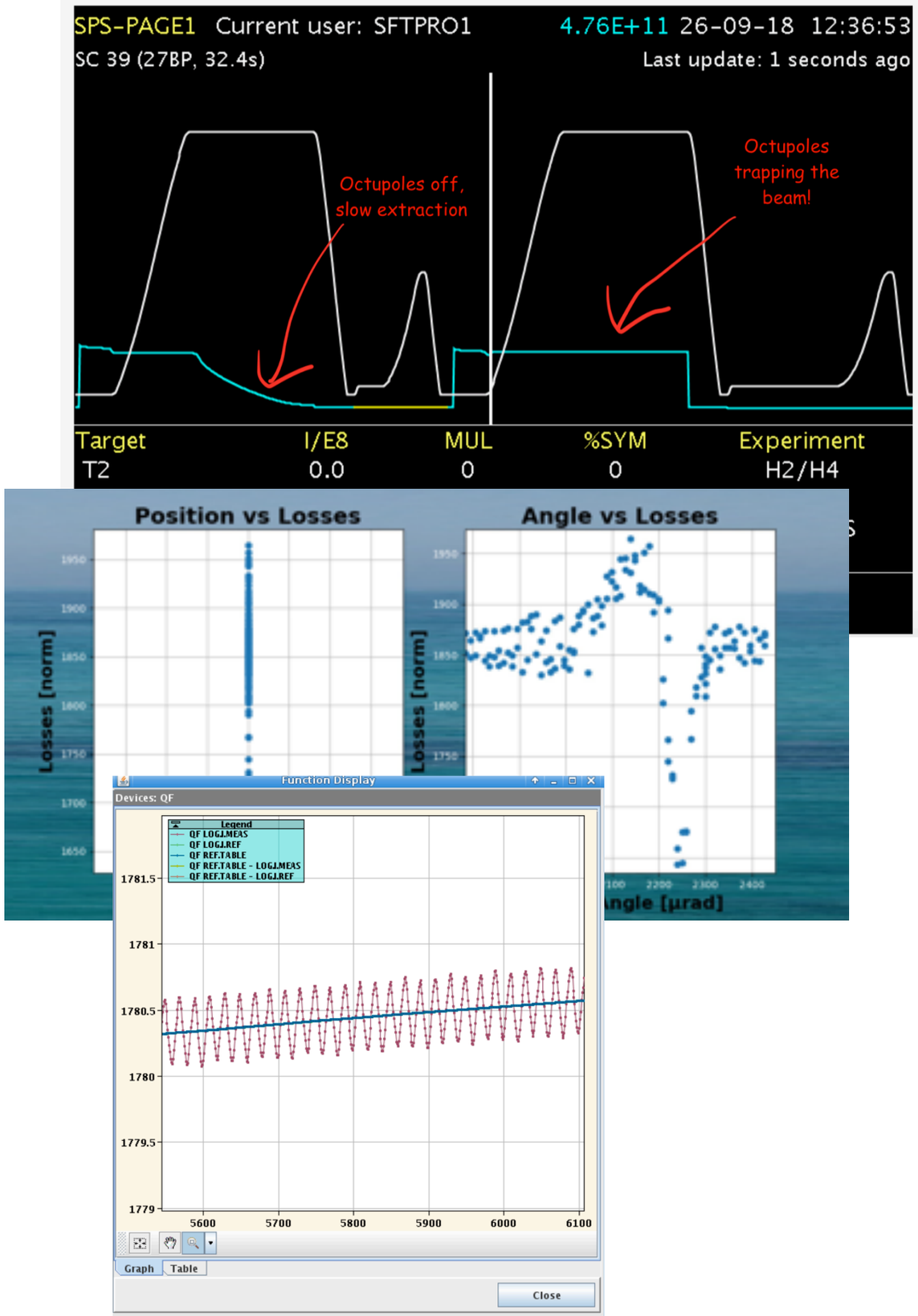
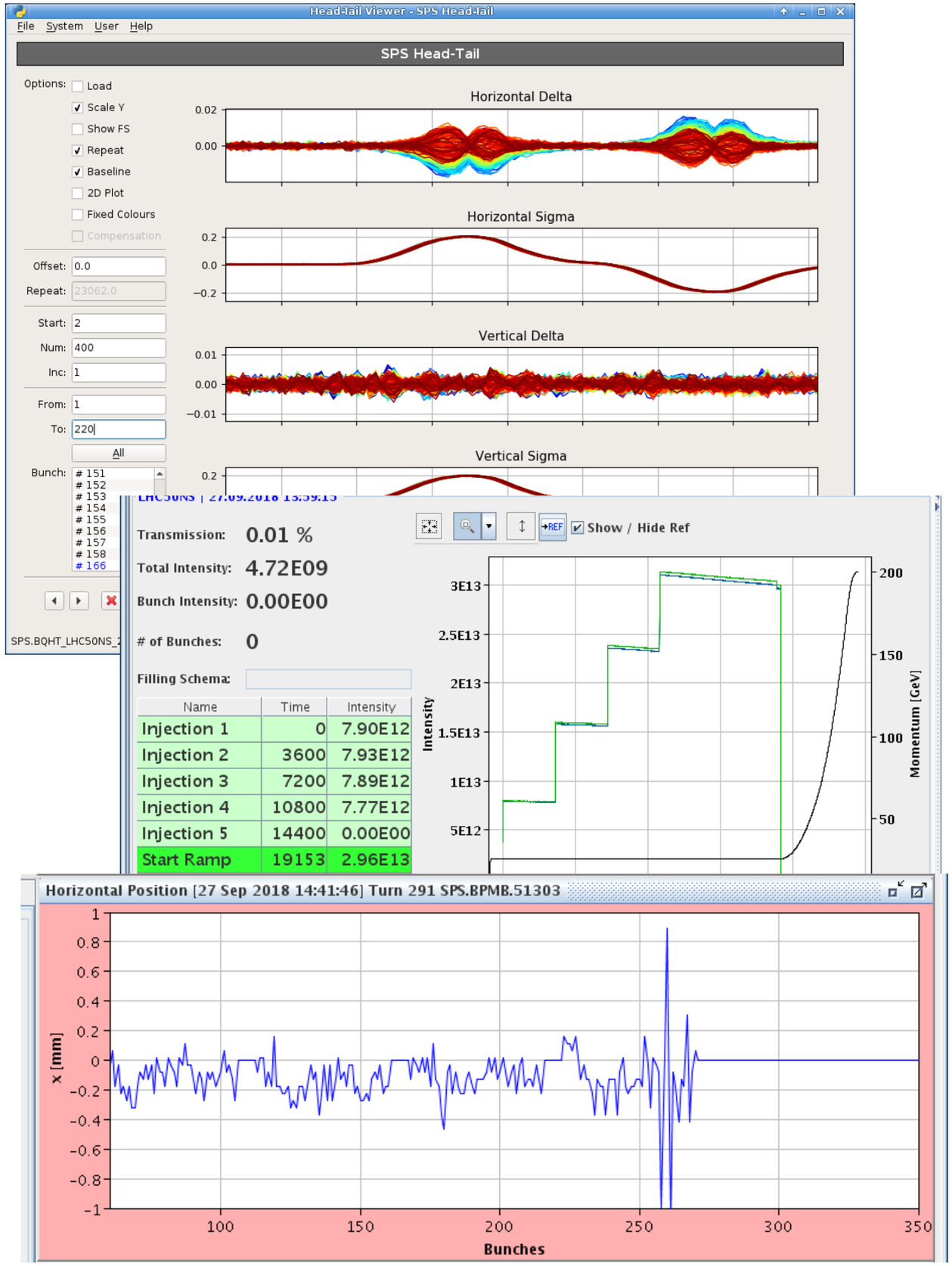


High Intensity MD

→ Taken 4 batches of 48 bunches at flat bottom

→ Intensity gradually increased to ~2e11 p/b

→ Instability observed at 1.8e11 p/b

↳ Stabilised up to 2e11 p/b with chroma and octupoles

↳ New octupoles configuration let uses high current without provoking too high incoherent losses