
CERN

Control of Linac4 from the CCC: status, missing items

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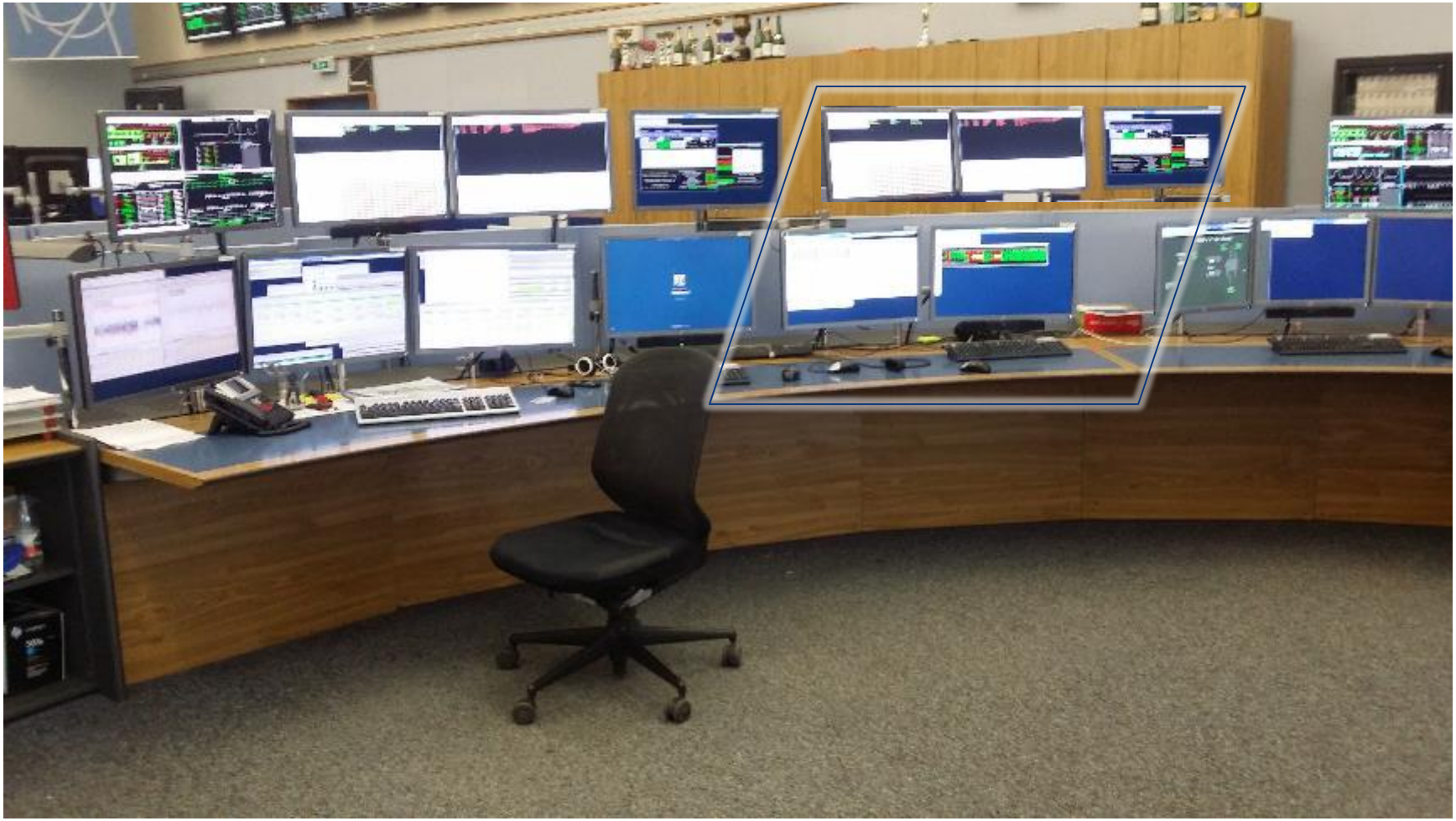
Overview

- CCC
- Applications already available
- Applications still to be prepared
- Summary
- Conclusion

CCC

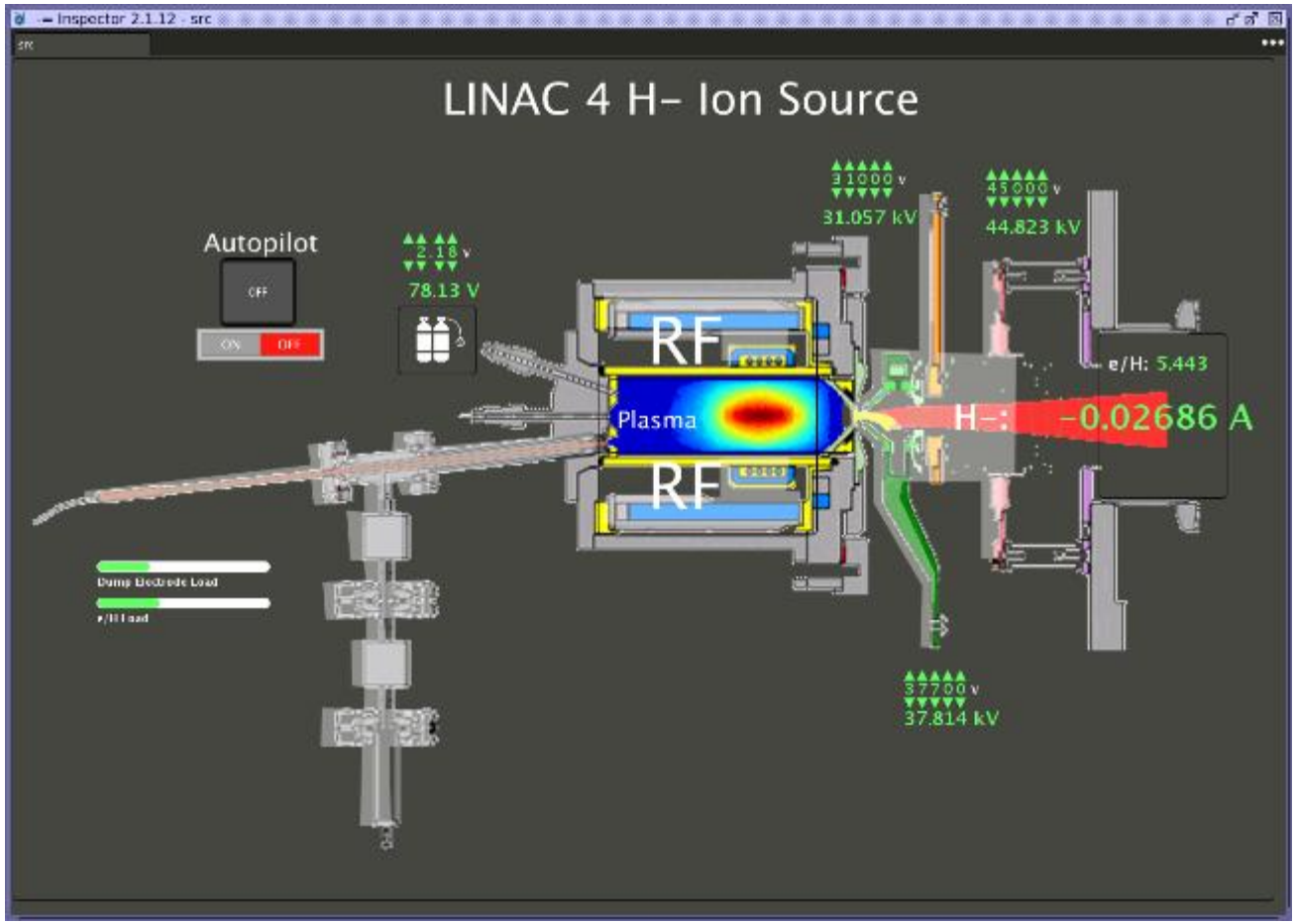


Applications already available

- Generic CO tools
  - Sequence Manager
  - INCA
    - WorkingSet, Knobs, Function editor
  - OASIS
  - LASER / DIAMON
  - Logging System
  - SIS
- Logbook

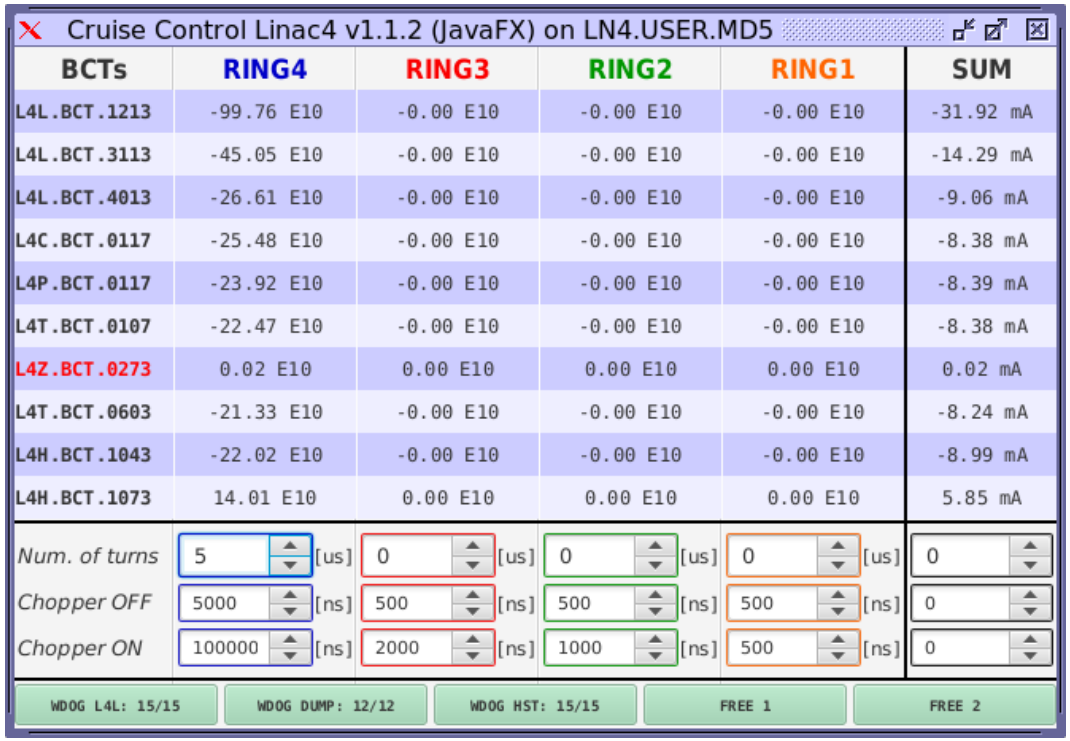
Applications already available

- Source Autopilot



Applications already available

- Cruise Control



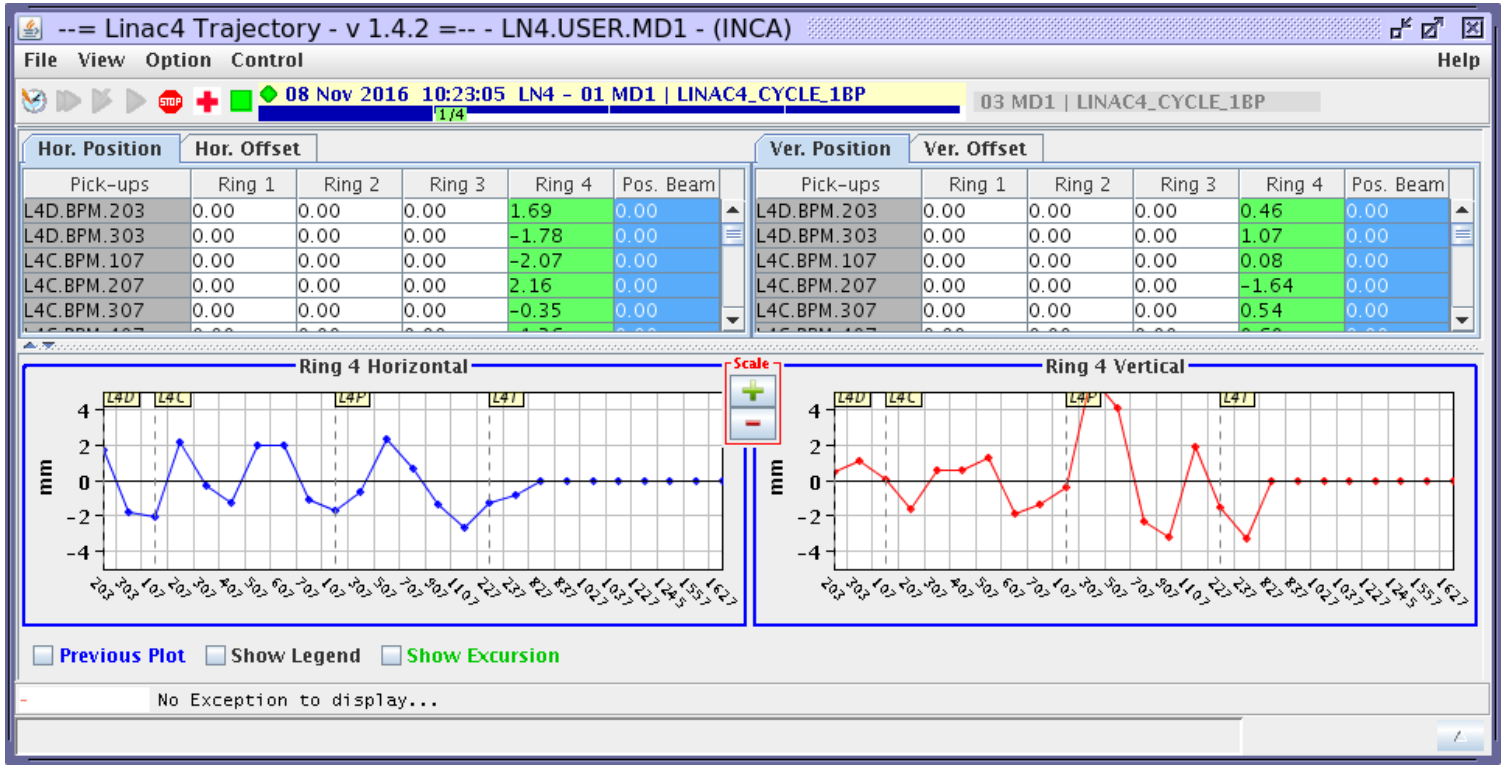
BCTs	RING4	RING3	RING2	RING1	SUM
L4L.BCT.1213	-99.76 E10	-0.00 E10	-0.00 E10	-0.00 E10	-31.92 mA
L4L.BCT.3113	-45.05 E10	-0.00 E10	-0.00 E10	-0.00 E10	-14.29 mA
L4L.BCT.4013	-26.61 E10	-0.00 E10	-0.00 E10	-0.00 E10	-9.06 mA
L4C.BCT.0117	-25.48 E10	-0.00 E10	-0.00 E10	-0.00 E10	-8.38 mA
L4P.BCT.0117	-23.92 E10	-0.00 E10	-0.00 E10	-0.00 E10	-8.39 mA
L4T.BCT.0107	-22.47 E10	-0.00 E10	-0.00 E10	-0.00 E10	-8.38 mA
L4Z.BCT.0273	0.02 E10	0.00 E10	0.00 E10	0.00 E10	0.02 mA
L4T.BCT.0603	-21.33 E10	-0.00 E10	-0.00 E10	-0.00 E10	-8.24 mA
L4H.BCT.1043	-22.02 E10	-0.00 E10	-0.00 E10	-0.00 E10	-8.99 mA
L4H.BCT.1073	14.01 E10	0.00 E10	0.00 E10	0.00 E10	5.85 mA

	RING4	RING3	RING2	RING1	SUM
Num. of turns	5 [us]	0 [us]	0 [us]	0 [us]	0
Chopper OFF	5000 [ns]	500 [ns]	500 [ns]	500 [ns]	0
Chopper ON	100000 [ns]	2000 [ns]	1000 [ns]	500 [ns]	0

WDOG L4L: 15/15 | WDOG DUMP: 12/12 | WDOG HST: 15/15 | FREE 1 | FREE 2

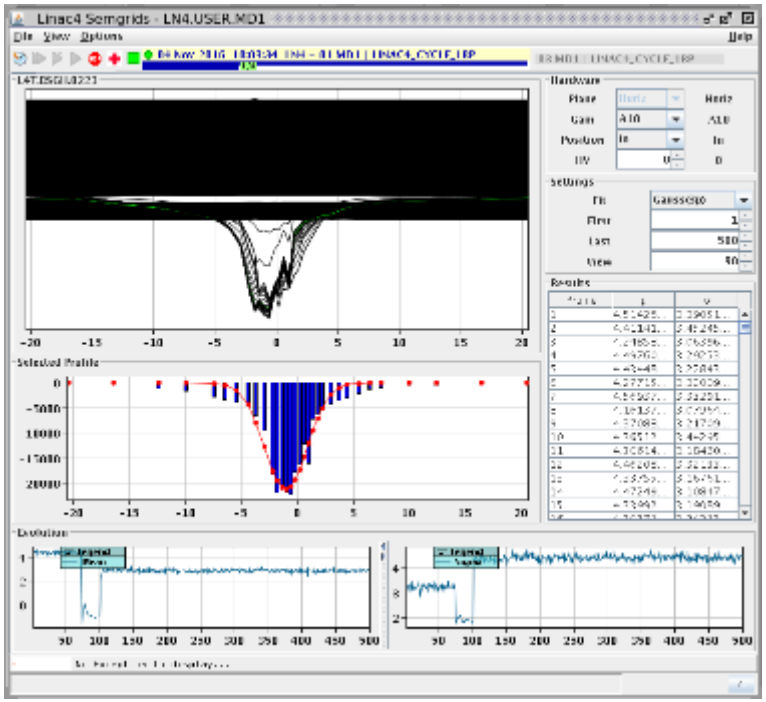
Applications already available

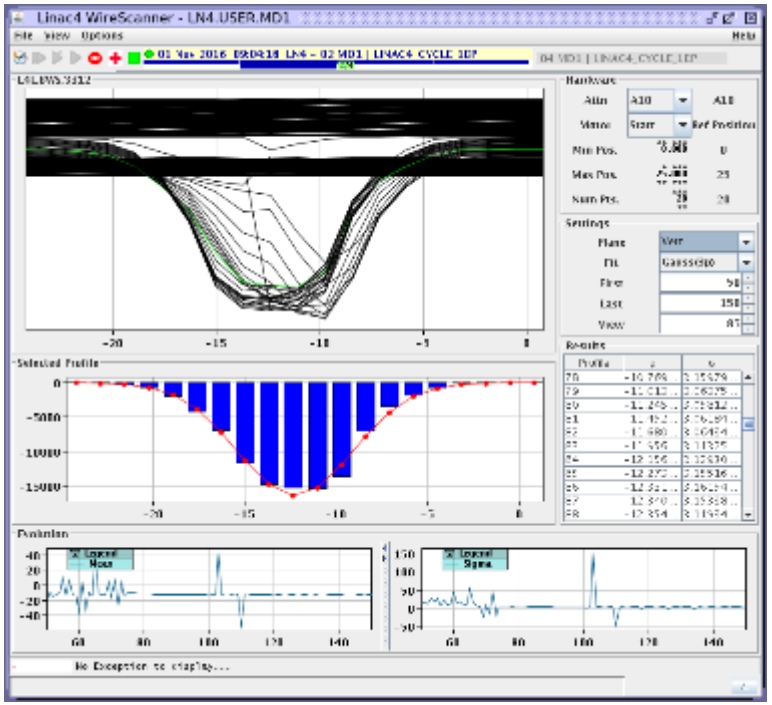
- Trajectory application



Applications already available

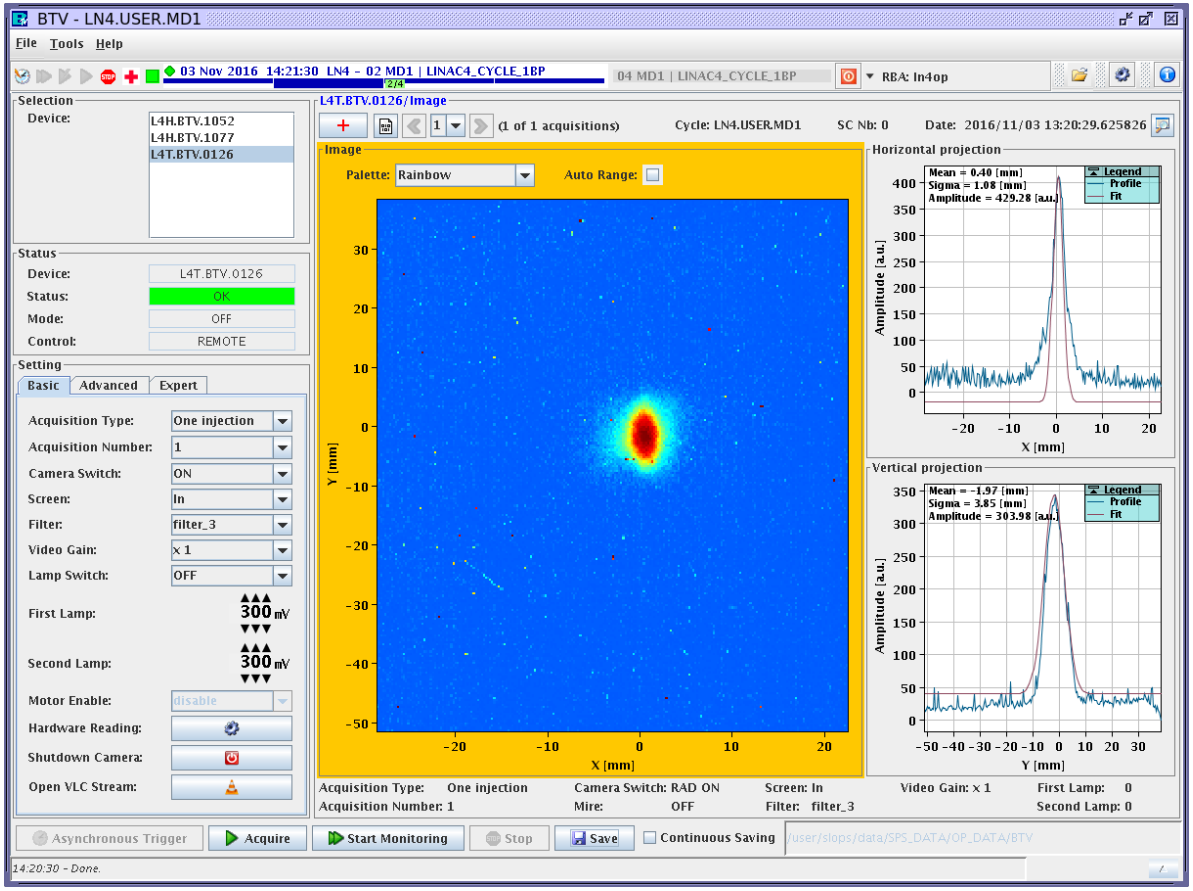
- SEM grids / Wire scanners





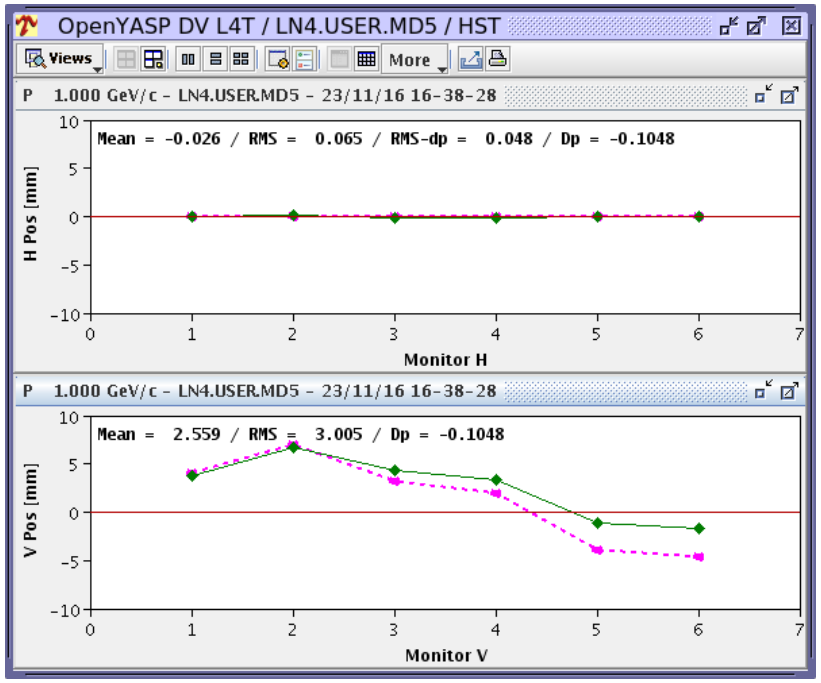
Applications already available

- BTVs



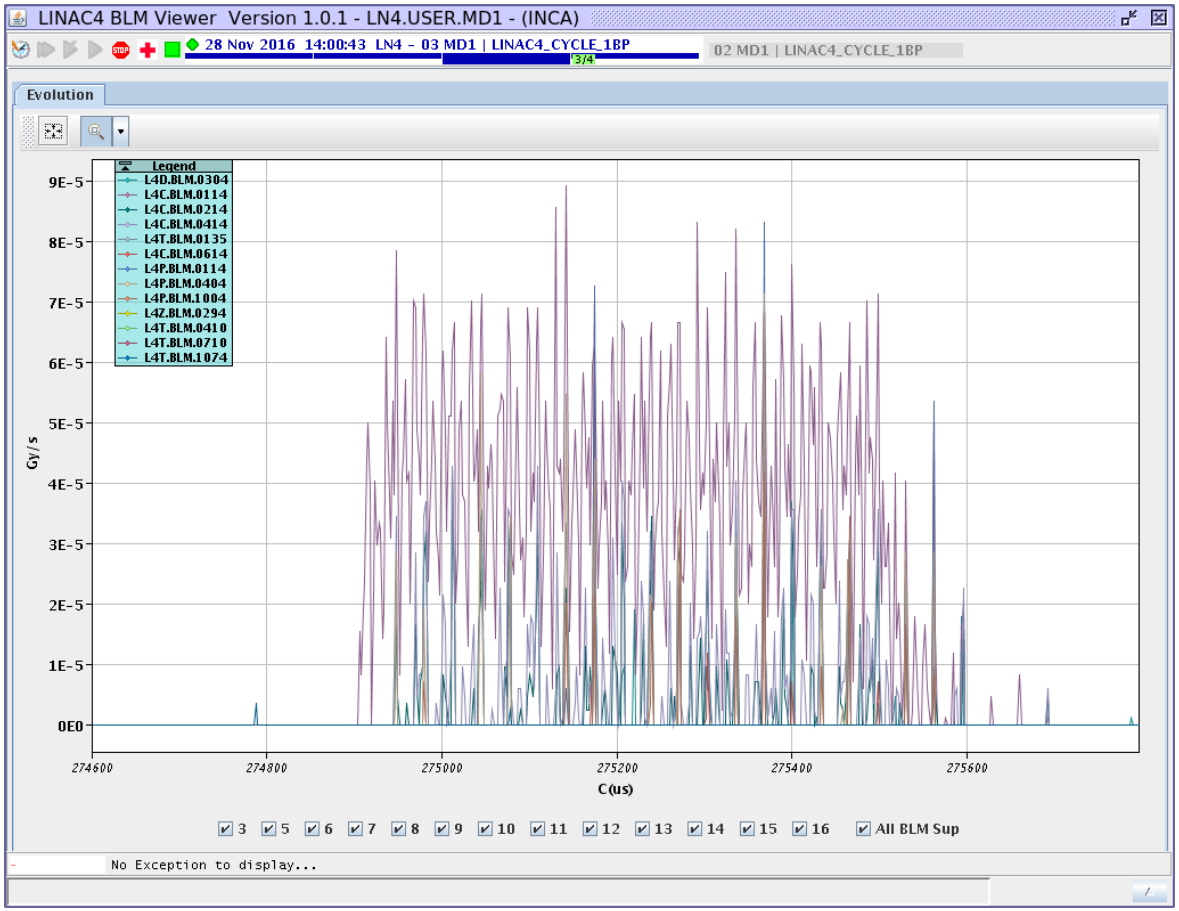
Applications already available

- YASP



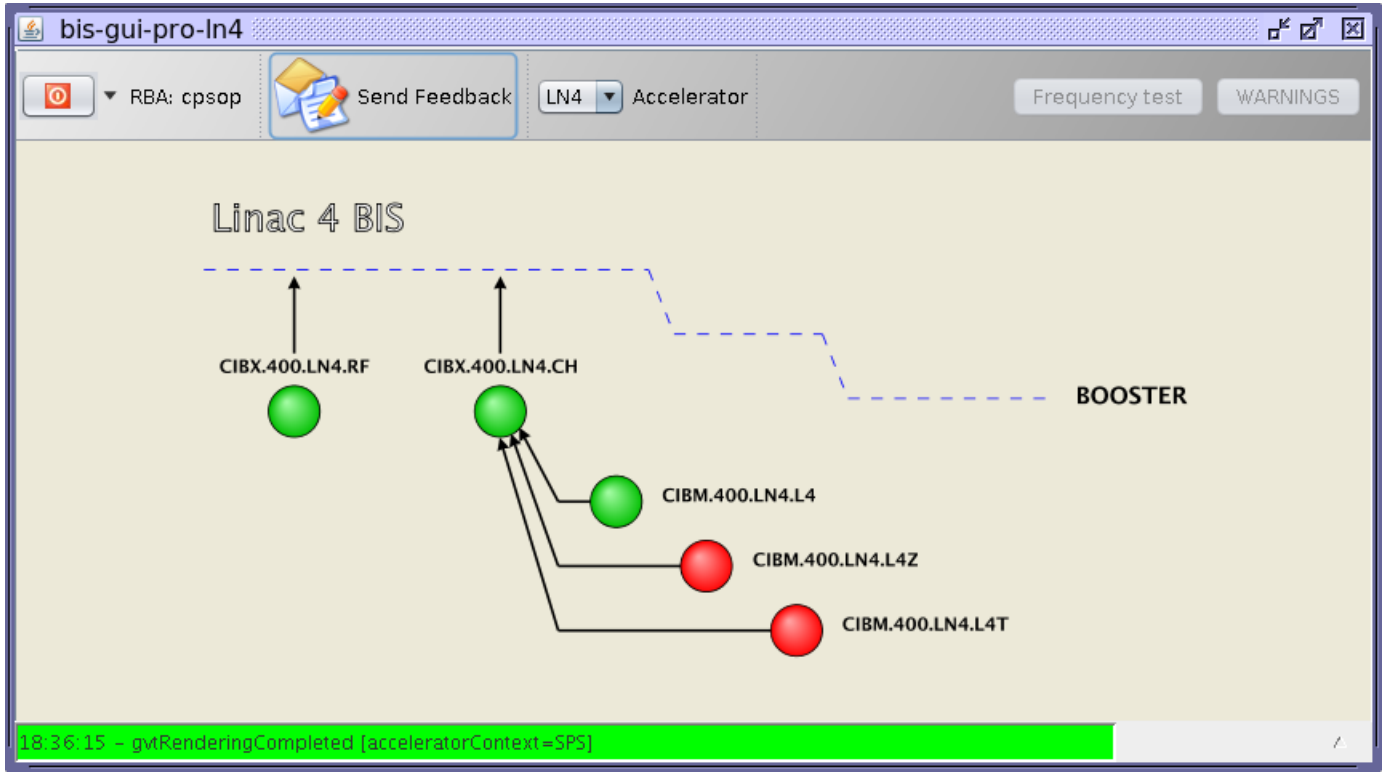
Applications already available

- BLM GUI



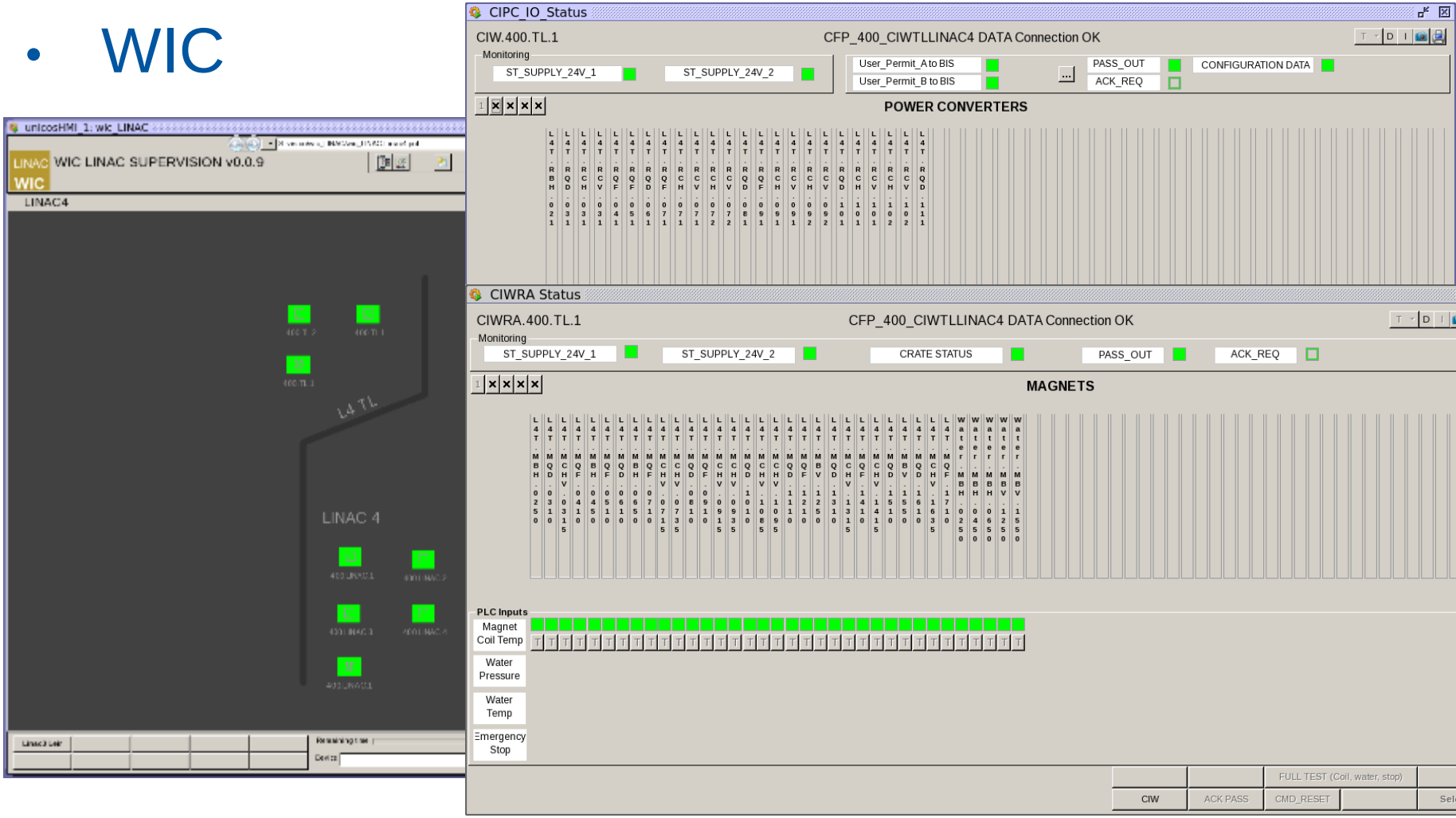
Applications already available

- BIS



Applications already available

- WIC



Applications still to be prepared

- Synoptics of Linac4 and transfer lines
- Fixdisplays Linac4
  - Source and RF status, BCTs, BLMs, stripping foil status
  - Linac4 machine and transfer line
- Linac4 RF
  - bunchers, RFQ, DTL (3 modules), CCDTL (7 modules), PIMS (12 modules), debuncher
  - A mixture of FESA 2 and FESA 3.
  - Many parameters not yet incaified. No standard PPM copy currently possible.
  - The knobs and working sets are not yet defined.
  - If special application required, specifications needed from RF team.
- Time of Flight
  - ToF to be calculated within FESA class
- Bunch shape measurement
  - Important to obtain energy spread. Application in progress.
- Transverse emittance measurement application
  - Emittance measurement in L4Z line (Linac4 dump line) using 3 Semgrids and taking into account space charge (algorithm needed from ABP)

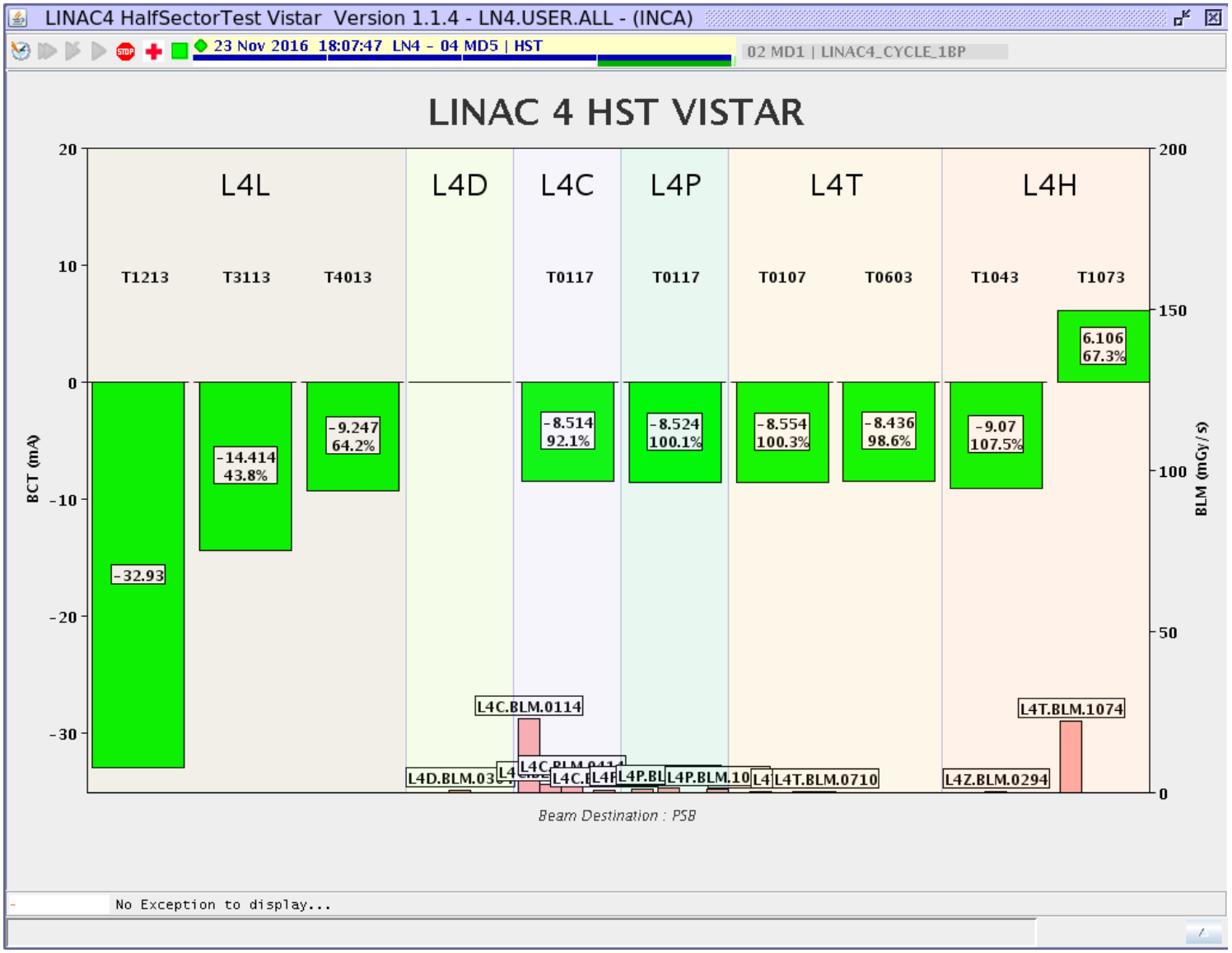
Summary

- A large amount of applications are available to control and qualify the beam.
- Fixdisplays will show an overview of the LINAC4 status. The operator will be informed quickly when something wrong happened.
- The logging system will help to do the post-mortem of the fault.
- The RF control needs clarifications.
- To better qualify the beam, some efforts are needed to improve the measurement of the energy, energy spread and the emittance.
- The elogbook will be one of the main tools for the reliability run. Faults, measurements etc. should be described in detail in the elogbook.

Conclusion

- Operation of the Linac4 from the ccc will be possible, but needs to be carefully prepared. The first week(s) might be needed to solve basic issues like RBAC, cleaning up LASER alarms etc. and should not be counted into the reliability period.
- Operators will be available to survey Linac4 during the reliability run, but priority is Linac2 and PSB operation.
- Need clarification of operational mode (simply survey and reaction to faults, or periodic change of settings, type and frequency of measurements etc.). What is the reaction to faults? (piquet coverage or not, nights/weekends?)

Spare


LINAC4 HalfSectorTest Vistar Version 1.1.4 - LN4.USER.ALL - (INCA)
23 Nov 2016 18:07:47 LN4 - 04 MD5 | HST
02 MD1 | LINAC4_CYCLE_1BP
LINAC 4 HST VISTAR
L4L
L4D
L4C
L4P
L4T
L4H
T1213
T3113
T4013
T0117
T0117
T0107
T0603
T1043
T1073
-32.93
-14.414
43.8%
-9.247
64.2%
-8.514
92.1%
-8.524
100.1%
-8.554
100.3%
-8.436
98.6%
-9.07
107.5%
6.106
67.3%
L4C.BLM.0114
L4T.BLM.1074
L4Z.BLM.0294
BCT (mA)
BLM (mGy/s)
Beam Destination : PSB
No Exception to display...