STATUS/PREPARATION OF THE CONTROL APPLICATIONS FOR L4-TO-PSB CONNECTION

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- Fixdisplay
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Generic software
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- Logging

Summary
Specific Software

Cruise Control

- **Control**
  - Number of turns (intensity regulator)
  - Instrumentations (BCT,BPM)
  - Chopper
  - PreChopper
  - BSW
  - KSW
  - RF (LINAC 4 + Booster)

- **Reset**
  - BCT watchdog
  - BLM

- **Display**
  - BCTs, efficiencies, Status BLM

HST validation
To DO: KSW, BSW, BLM reset, chopper Tables
Estimation 0.4FTE (No longitudinal painting)
Specific Software

Trajectory display (TOF)

Validation in the HST
TO DO: Calculation and display of TOF
Collaboration BI + OP
Estimation: 0.3 FTE
Specific Software

Optimizer

To do: Injection optimisation with Nelder–Mead method (simplex method).

New optimization tool uses a statistical technique to optimise beam steering. The optimisation algorithm is actually under test on PSB injection. It includes dipoles and optimises the injection beam transmission tuning >= 2 elements at the same time.

We'd like to test soon on the HST.

Estimation: 0.3 FTE
**Specific Software**

**BLM**

- **New fixdisplay for the BLM ring (CO + OP)**
  - 32 new BLM displayed
  - History of the sum (injection, ring, extraction).
  - To do:
    - Add 32 new ring BLM
    - Add the injection BLM

**Injection BLM survey**

- Display the LINAC 4 and injection BLM f(t)
- Set the 6 thresholds by BLM.

**WorkingSet and knobs.**

**Estimation : 0.4FTE**
Specific Software

**SIS**

**LINAc 4**

- Source
- Instrumentation (Wire Scanners, semgrid)
- L4T.TKSTR.0124 Survey
- RF (voltage, phase, ...)
- Acquisition of the bendings, quadrupoles and dipoles.
- Chopper, Prechopper, Timings,...
- HST: Limitation of the intensity, BSW, Dump,...

**SFC** (stray field compensation)

**PSB injection by ring (To do)**

- Septa, Dipoles, Quadrupoles,
- BSW, KSW, QSTRIP
- H0/H- detector
- Stripping foil
- Diamond BLM,...

**Estimation: 0.4 FTE**
Specific Software

- **Fixdisplay**
  - **LINAC4**
    - Acquisition
      - Destination
      - BCT
      - BLM
      - BeamStoppers
    - Status
      - RF
      - Bendings (H +V)
      - PreChopper, Chopper
      - BIS
      - Watchdogs
    - **Estimation : 0.25 FTE (OP + CO)**
  - **Injection Booster**
    - BCT
    - injection efficiency
    - H0/H- monitor history
    - Interlocks
    - **Estimation : 0.25 FTE (OP + CO)**
Specific Software

• **INCA Make Rules**
  - Qstrip + quadrupolar compensation (chicane)
  - Chicane bump in mm
  - Angle and position of the last dipoles (H + V)
  - KSW (1 knob to control 4 power supplies)
  - RF linac4 ??

• **Estimation : 0.4 FTE (OP + CO + ABP + ABT)**
Generic software

• **Knobs/workingSet**
  • New layout of workingset
  • New layout of knobs
  • New workingSet
  • **Estimation 0.3 FTE**

• **YASP**
  • Steering injection line
  • Close orbit
  • **Estimation 0.3 FTE**

• **Logging**
  • Linac4 (Source, RF, Chopper table, timings, power supplies,...)
  • Transfer line (Bendings, Dipoles, quadrupoles, RF,...)
  • Instrumentation (BCTs, BPM+TOF, BLM, H-/B0 detector, chopper table, ...)
  • **Estimation : 0.3 FTE**
Summary

- To connect the Linac4 to PSB we need 3.6 FTE
- Fixdisplay applications will be done by CO with the OP specifications
- MakeRules will be done in collaboration with OP, CO, ABT, ABP
- We are in good progress
- During HST different part of the soft will be validated

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<thead>
<tr>
<th>Software</th>
<th>FTE</th>
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<td>BPM Display (TOF)</td>
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<td>Optimizer</td>
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<tr>
<td>BLM survey</td>
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<td>Makerules</td>
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