

CTF3 Streak Camera Results and Improvements

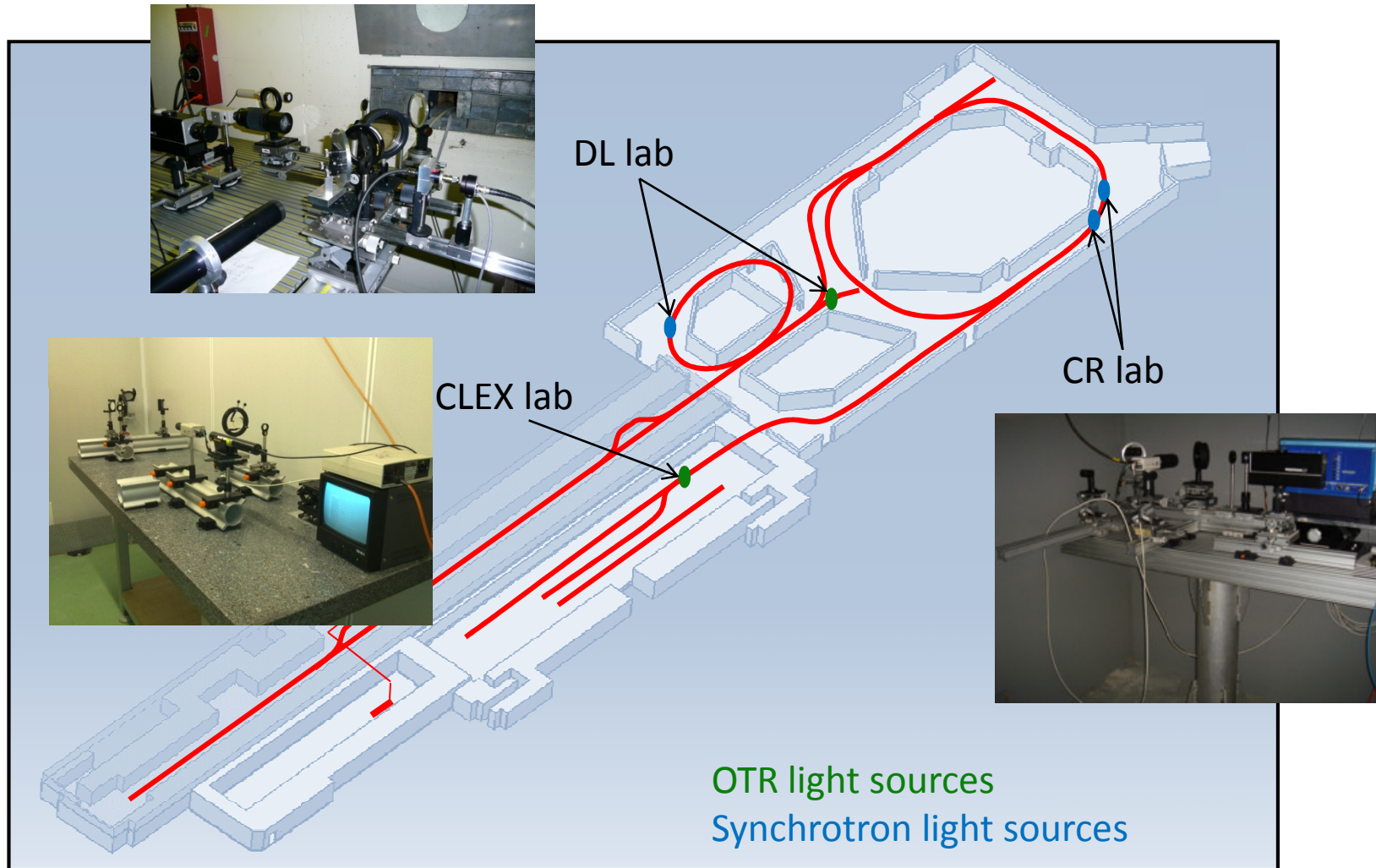
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09.02.2012

Summary

- 2011 Measurements in CR, DL and CLEX
- Optical lines improvements
- Streak camera operation
- Discussion

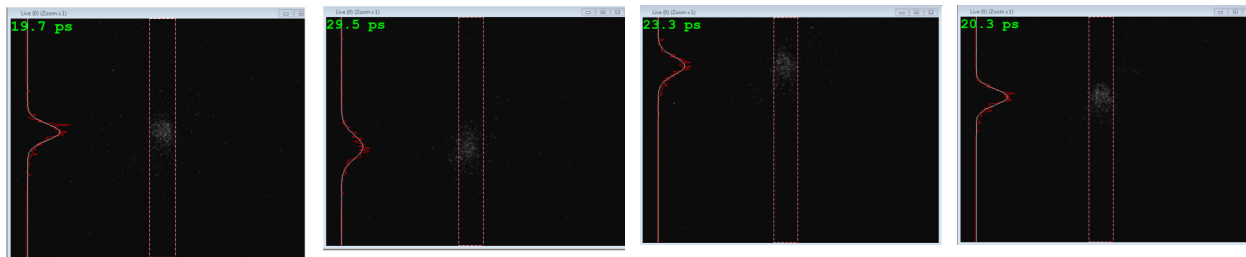
Streak camera optical lines



2011 Measurements

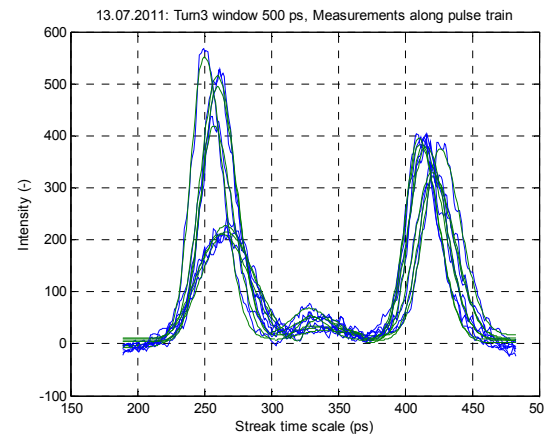
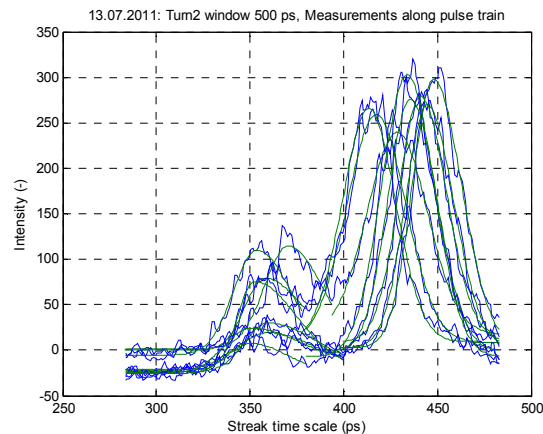
Combiner ring: Bunch length stability and bunch spacing

Multi-turn bunch length stability (July)



Bunch length: 200 ps window Turn 1 to Turn 4 (10.06.2011)

Bunch Spacing (July)



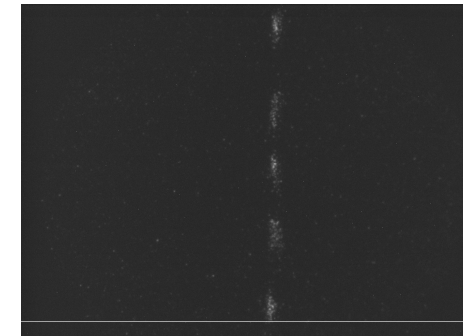
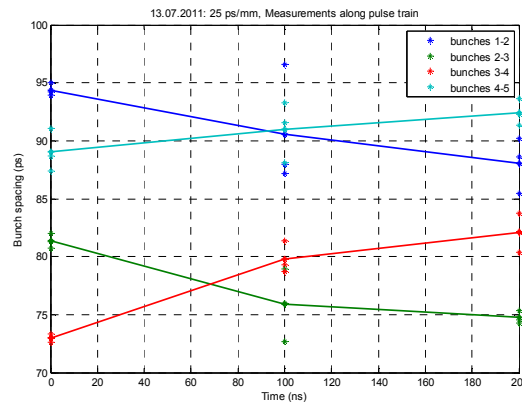
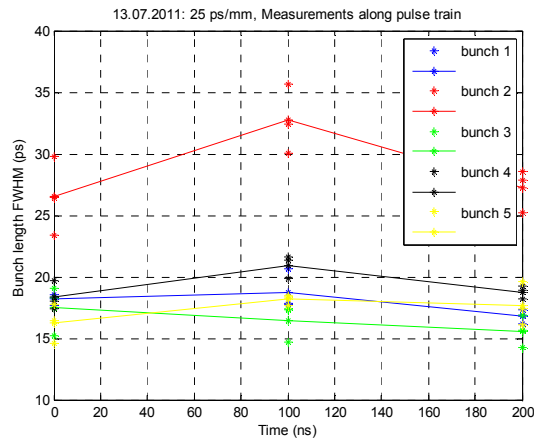
Bunch spacing : 500 ps window Turn2 and 3 (13.07.2011)

Very few measurements
this year due to the
difficulties to operate the
beam
+
Misalignment of the
optical line

2011 Measurements

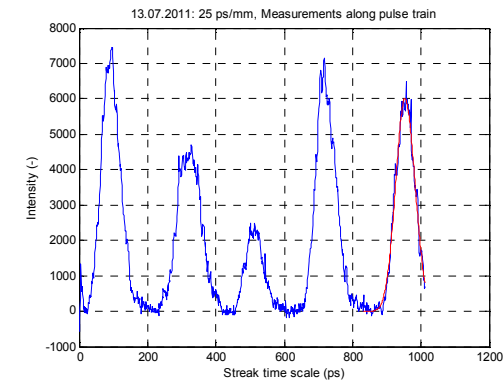
CLEX: bunch length and bunch spacing

Bunch length and bunch spacing along the train (July)



Bunch length and bunch spacing along train: 25 ps/mm speed

First measurements with the line done successfully
Need more beam time to finish commissioning



Optical lines improvements

Combiner ring:

re-alignment of the lines => next week

Delay Loop:

re-aligned last year, should be ready for measurements

(No measurements last year due to difficulties to send the beam in DL)

CLEX:

- addition of a light shielding => next month

- replacement of the lens by an elliptical mirror => this year

Third streak camera equipped with readout camera => ready

=> **One streak camera for each lab**

Operation of the streak cameras

General procedure:

- spot adjustment in focus mode (no sweep) : the spot should be centered on the slit and as focused as possible
- slit reduced to 0.2-0.4mm (depending of the spot size and the light intensity)

In Focus mode, the camera is really sensitive to light

- switch in sweep mode with the biggest time window (1ns) to find the train (trigger delays adjustment)
- Reduce step by step the time window with trigger and gain adjustment

For this procedure, the presence in the lab is required

Operation of the streak cameras

Old streaks:

- Manual control of shutter, slopes and gain
=> For the operation of old streaks, presence in the lab required
- no online values => data needed to be processed (Matlab or equivalent)

New streak:

- automatic control of shutter, slopes and gain
- online bunch length value provided
- possibility to use cursors on the graphic window for rough bunch spacing values
- possibility to control the camera with LabView application

Discussion

- Online processing of the data (Labview application or else)
- Remote control of the cameras
- ...