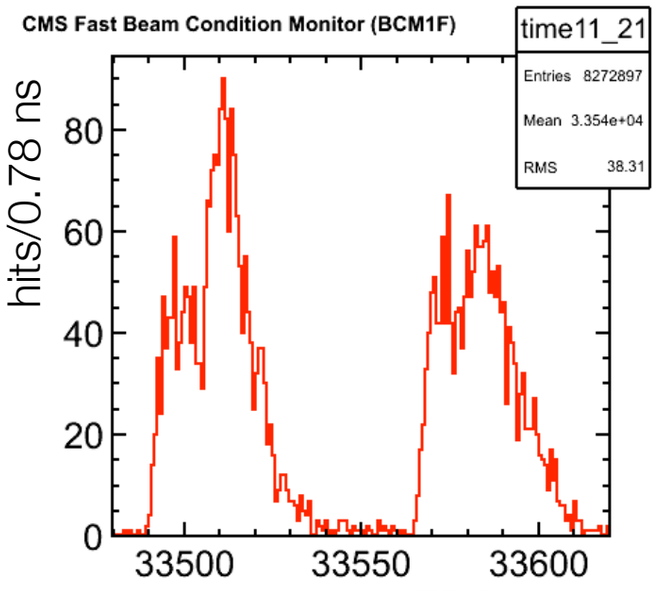
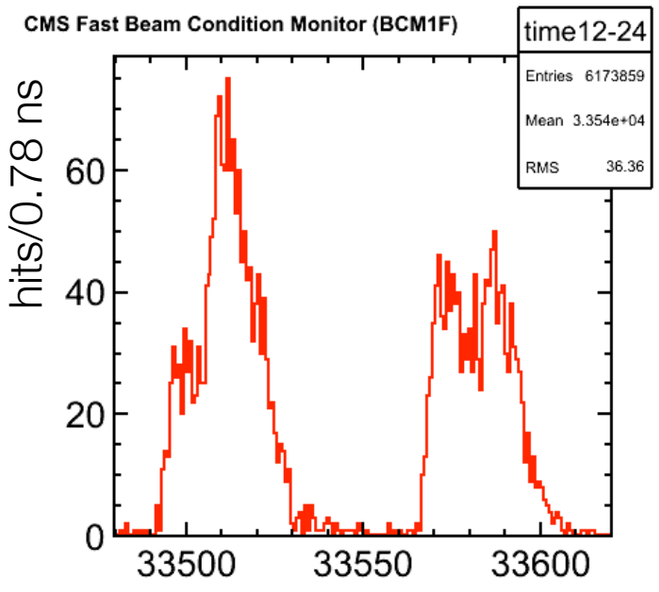
BCM1F TDCs

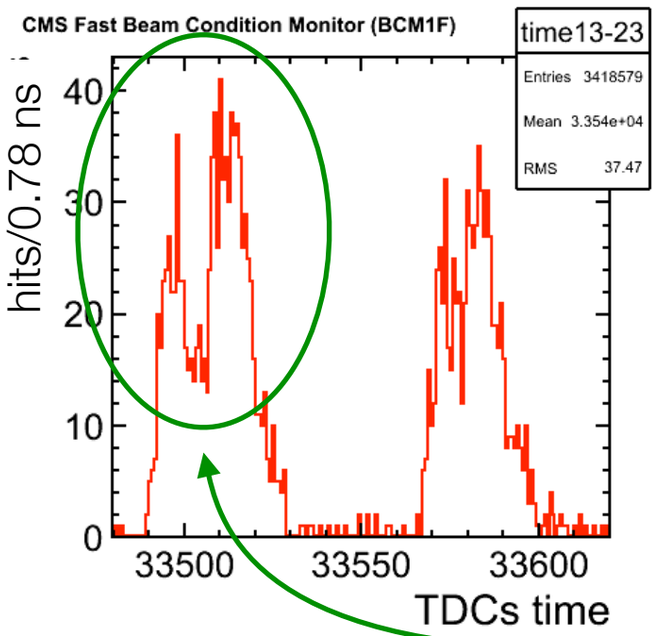
Roberval Walsh
DESY

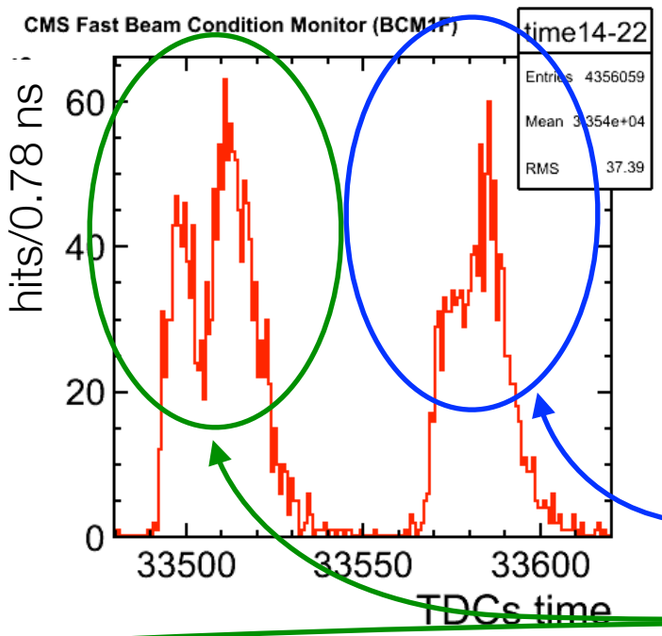
Weekly FCAL-CMS meeting
23.08.2010

Last presentation
Fill 1225: BX 1092-1095









1092 1095 1092 1095

- Direct opposite channels added up.
  - A double-peak structure for bunch 1092 can be seen. In some channels, e.g. 13-23, it is more clear than in others (12-24).
- But for bunch 1095 the double-peak is not so clear. Evidence for particles in neighboring buckets?

Beam 1
Not clear double peaks
Beam 2
Clear double peaks

LHC Status Report

LPCC ICHEP Overview

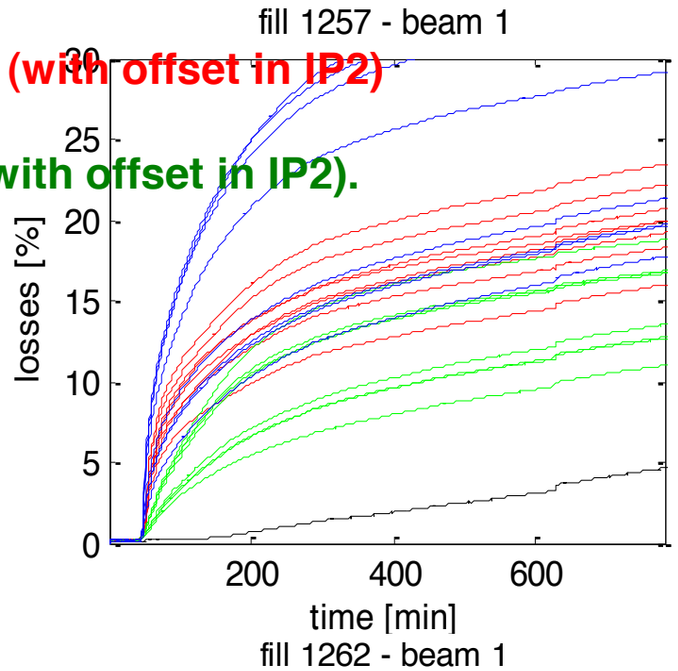
Collisions with 25 bunches

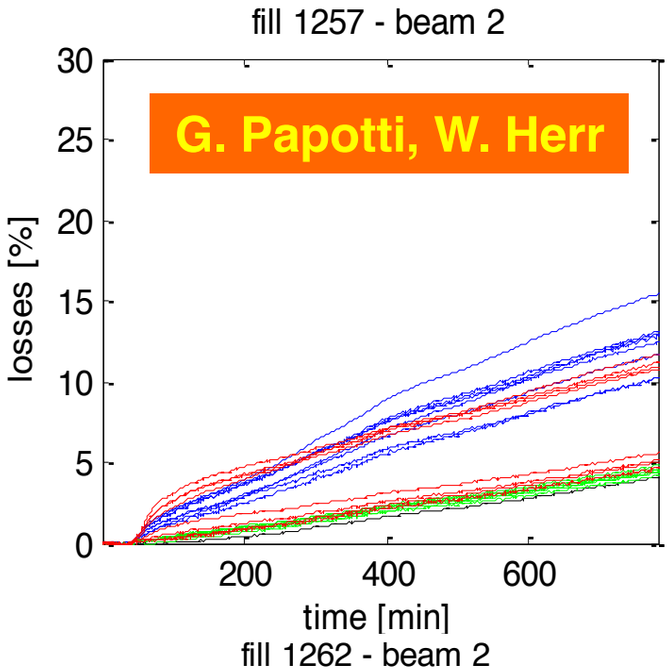
- 0 collisions
- 3 collisions IP 1 5 and 2 (with offset in IP2)
- 3 collisions IP 1 5 and 8
- 2 collisions IP 2 and 8 (with offset in IP2).

- Relative losses for B1 and B2:
  Fill 1257
  Q split

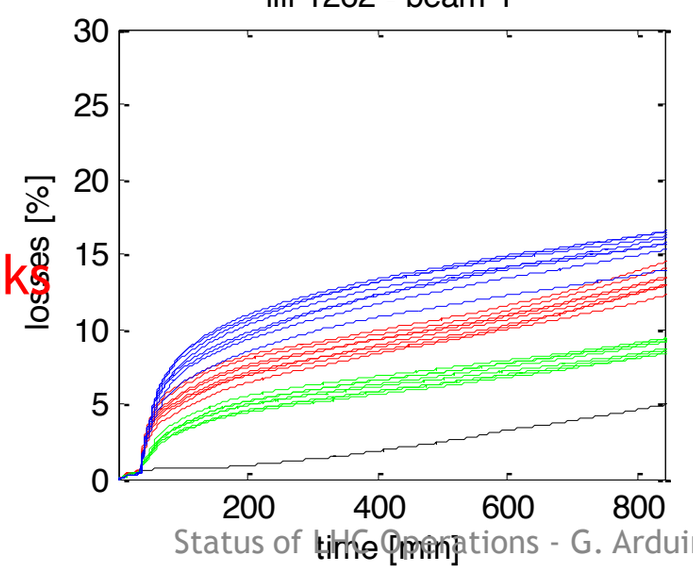
Vs.

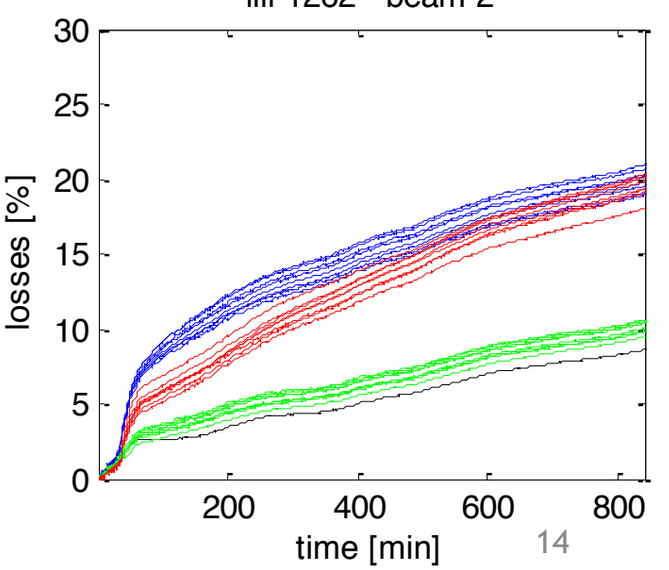
Fill 1262
with no Q split
Now possible thanks to the transverse feedback





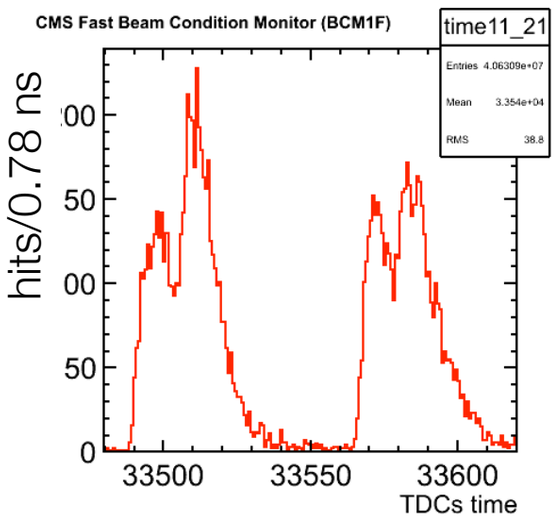
G. Papotti, W. Herr

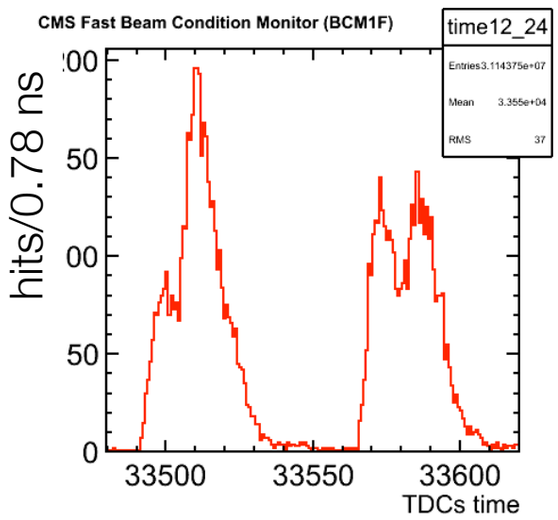


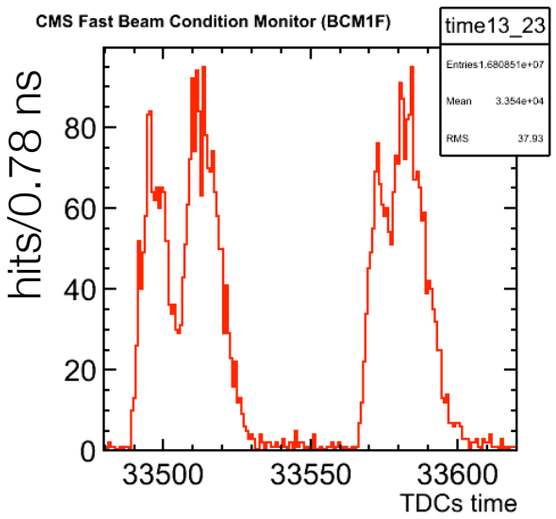


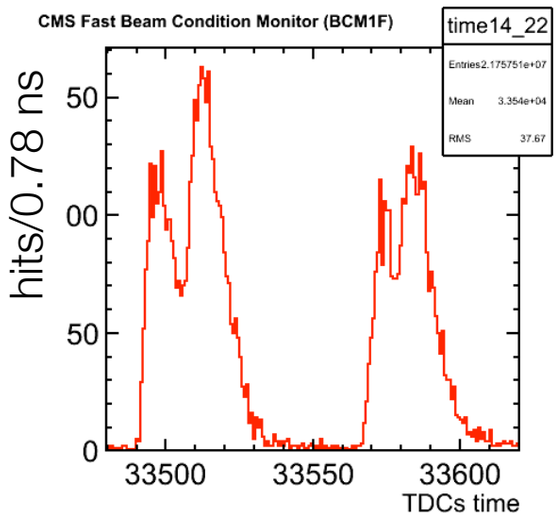
Fill 1257 x 1262: BX 1092-1095

Fill 1257 - beam1 larger losses

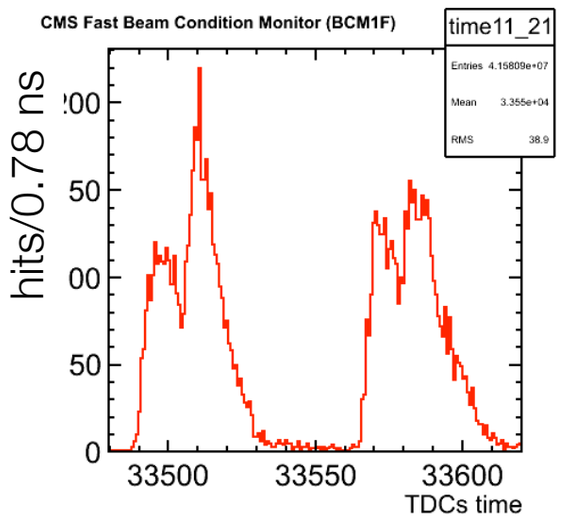


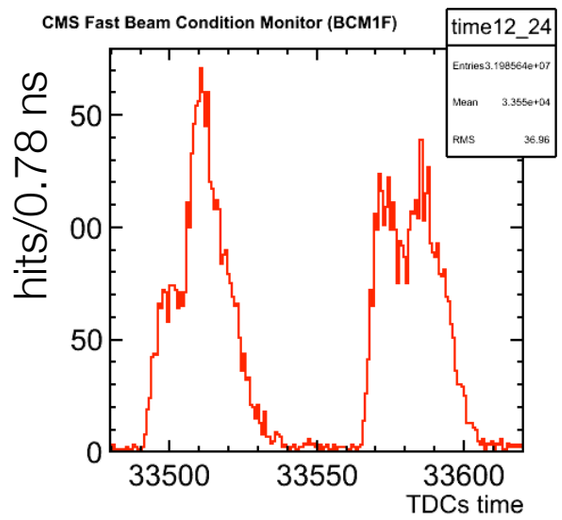


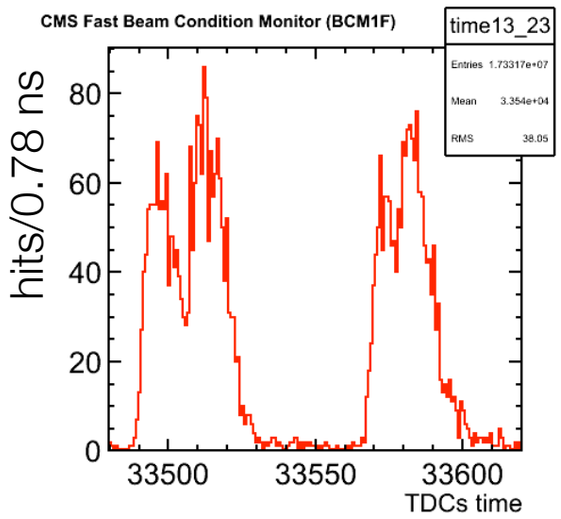


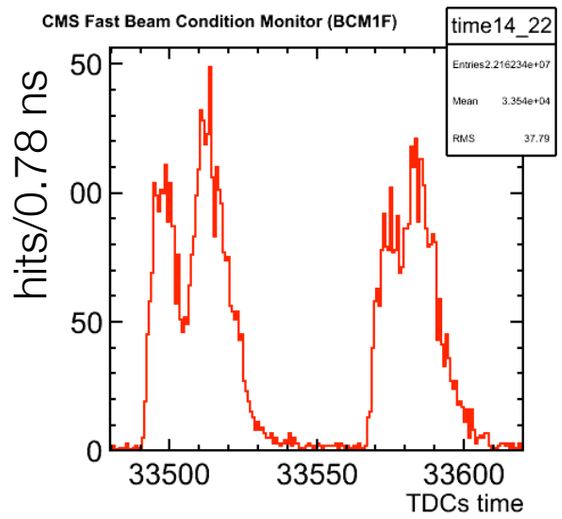


Fill 1262









At least for non-colliding bunches the larger losses from beam 1 seems not to be the reason for worse resolution of the two peaks.

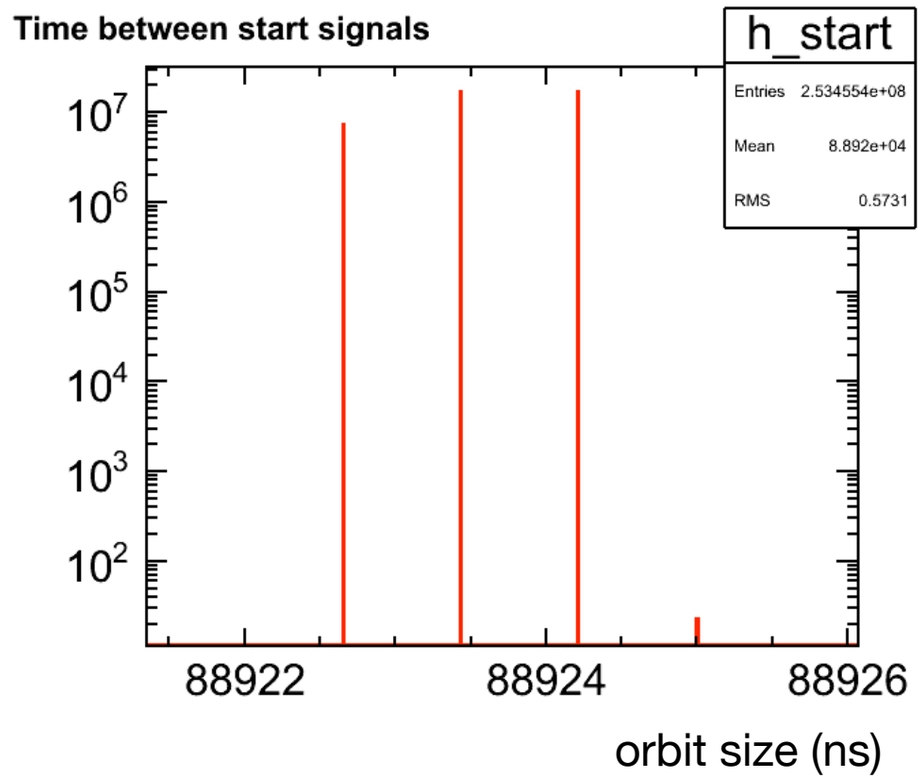
TDCs start signals (orbit trigger)

- Jittering observed…
- The values of the start signals should be multiples of 25/32 = 0.78125 ns. It is true, for low values of the start signals...

Terminal — Basic — ⌘4

ssh

```
root [11] OrbitsTree -> Scan("startTime", "startTime<6")
************************
*    Row   * startTime *
************************
*    14806 *         0 *
*   100387 *     3.125 *
*   351554 *    1.5625 *
*   640527 *         0 *
*   654918 *     3.125 *
*   890454 *   0.78125 *
*   968005 *    1.5625 *
*   987095 *   5.46875 *
*  1055531 *   5.46875 *
*  1327582 *   2.34375 *
*  1365971 *         0 *
*  1470774 *    4.6875 *
*  1518696 *   5.46875 *
*  1630694 *    1.5625 *
*  1702376 *         0 *
*  1923299 *   5.46875 *
*  2219303 *   5.46875 *
*  2236851 *    4.6875 *
*  2318746 *   3.90625 *
*  2423213 *     3.125 *
*  2424829 *   2.34375 *
*  2465309 *     3.125 *
*  2708243 *   5.46875 *
*  2890011 *     3.125 *
*  2948405 *         0 *
Type <CR> to continue or q to quit ==>
```



Time (ns) from raw data

(raw[i] & 0xFFFFF))*25/32

TDCs start signals (orbit trigger)

- …but not for large values.

Terminal — Basic — ⌘4

ssh

```
root [12] OrbitsTree -> Scan("startTime", "startTime>819195")
************************
*    Row   * startTime *
************************
*    95244 * 819198.43 *
*   273641 * 819198.43 *
*   274827 * 819198.43 *
*   706070 * 819197.62 *
*   741905 * 819198.43 *
*   755764 * 819197.62 *
*   798270 * 819198.43 *
*   850542 * 819195.31 *
*  1065612 * 819196.87 *
*  1414045 * 819196.12 *
*  1608636 * 819195.31 *
*  1653740 * 819196.87 *
*  1704258 * 819195.31 *
*  1857672 * 819196.87 *
*  2467966 * 819198.43 *
*  3235858 * 819198.43 *
*  3488086 * 819199.25 *
*  3656679 * 819198.43 *
*  3854442 * 819196.12 *
*  3928202 * 819198.43 *
*  3930179 * 819199.25 *
*  3998598 * 819197.62 *
*  4060824 * 819196.12 *
*  4285479 * 819196.12 *
*  4602566 * 819197.62 *
Type <CR> to continue or q to quit ==>
```

- For mid values there is a mix.

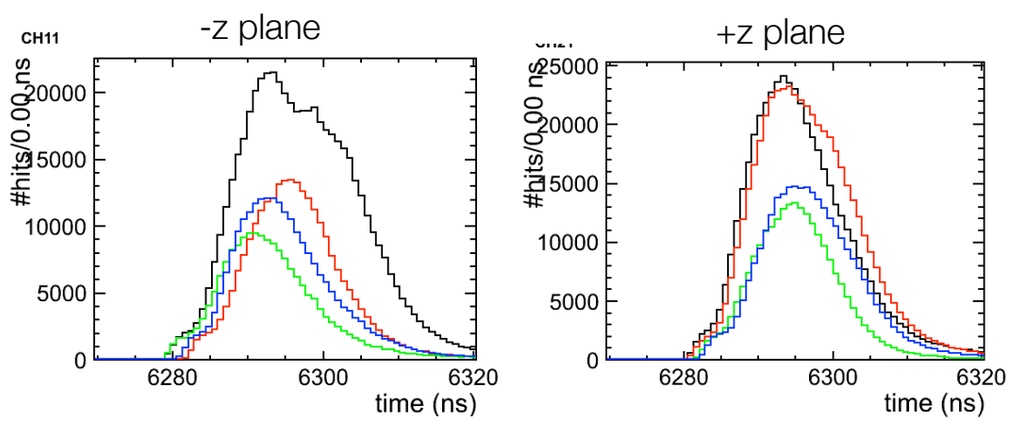
Terminal — Basic — ⌘4

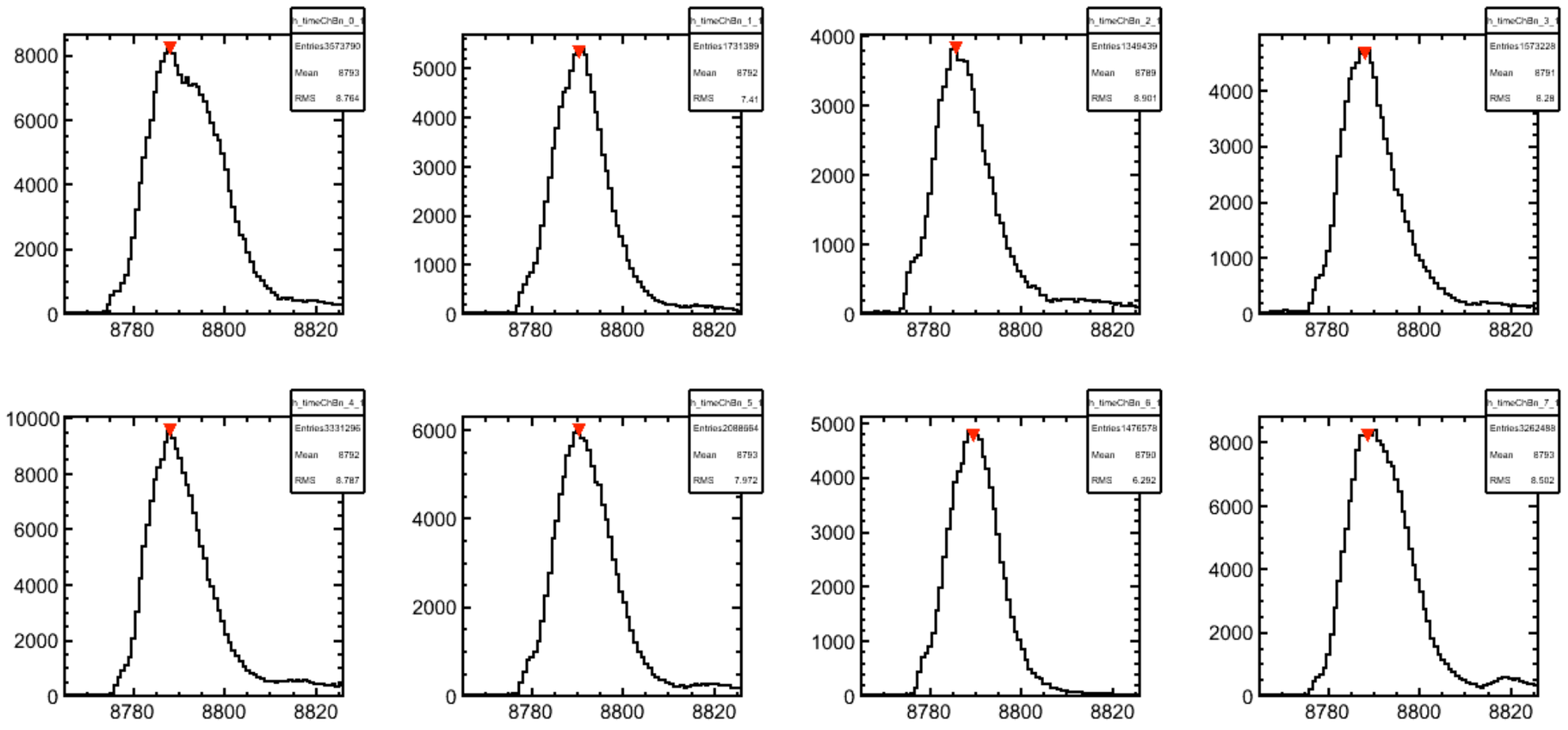
ssh

```
root [14] OrbitsTree -> Scan("startTime", "startTime>=31250 && startTime<31$
************************
*    Row   * startTime *
************************
*    25325 * 31253.906 *
*   103971 * 31253.906 *
*   143198 *  31256.25 *
*   156256 * 31254.687 *
*   160742 *  31256.25 *
*   208546 * 31255.468 *
*   214148 * 31250.781 *
*   349092 *  31256.25 *
*   359101 * 31253.906 *
*   429502 *     31250 *
*   453395 * 31251.562 *
*   521263 * 31251.562 *
*   747995 * 31250.781 *
*   850596 * 31257.812 *
*  1121865 * 31253.906 *
*  1129444 * 31258.593 *
*  1163189 * 31257.031 *
*  1178861 * 31251.562 *
*  1316019 * 31253.125 *
*  1639058 * 31253.906 *
*  1685756 * 31255.468 *
*  1748762 * 31257.031 *
*  1832171 * 31250.781 *
*  1933703 * 31253.125 *
*  1948393 * 31257.031 *
Type <CR> to continue or q to quit ==>
```

Calibration

- Correct peak position.
- Using TSpectrum to search for the peaks





BCM1F code repository

- BCM1F repository created at DESY SVN Server (https://svnsrv.desy.de).
- Developers need to register first depending on the authentication...
  - For DESY people: Login using AFS account at https://svnsrv.desy.de/admin/desy
  - For others: Register at https://svnsrv.desy.de/admin/basic
- … then select to join the BCM1F repository. I should receive a notification to approve your request to join.
- A wiki page is under construction with more instructions and basic SVN commands.
  - https://znwiki3.ifh.de/CMS/Bcm1fRepository

BCM1F code repository

- Web view of repository at https://svnsrv.desy.de/websvn/wsvn/General.BCM1F?
- Projects for TDCs, Scalers and Analysis codes are already available.

SUBVERSION REPOSITORIES GENERAL.BCM1F

General.BCM1F | calm | English - English

(root)/ - Rev 18

Rev HEAD Go

Rev 17 | Last modification | Compare with Previous | View Log | RSS feed

LAST MODIFICATION

Rev 18 2010-08-13 11:26:07

Author: walsh

Log message:

Creating a directory for the branches

Path	Last modification		Log	Download	RSS
Analysis/	9	18h 24m walsh	Log		RSS
BCM1F_ECL_Scaler/	18	4m walsh	Log		RSS
BLT_arrays/	14	22m walsh	Log		RSS

Compare Paths

Powered by WebSVN 2.3.1 and Subversion 1.4.2 ✓ XHTML & CSS

Outlook

- Compared two fills with different conditions (losses) for beam 1. Resolution of two peaks not dependent on those conditions.
- Start signals time not always multiple of 0.78125 ns.
  - Need to look the hits signals.
  - Is this effect large? Change binning in time distributions?
- New repository for BCM1F codes.