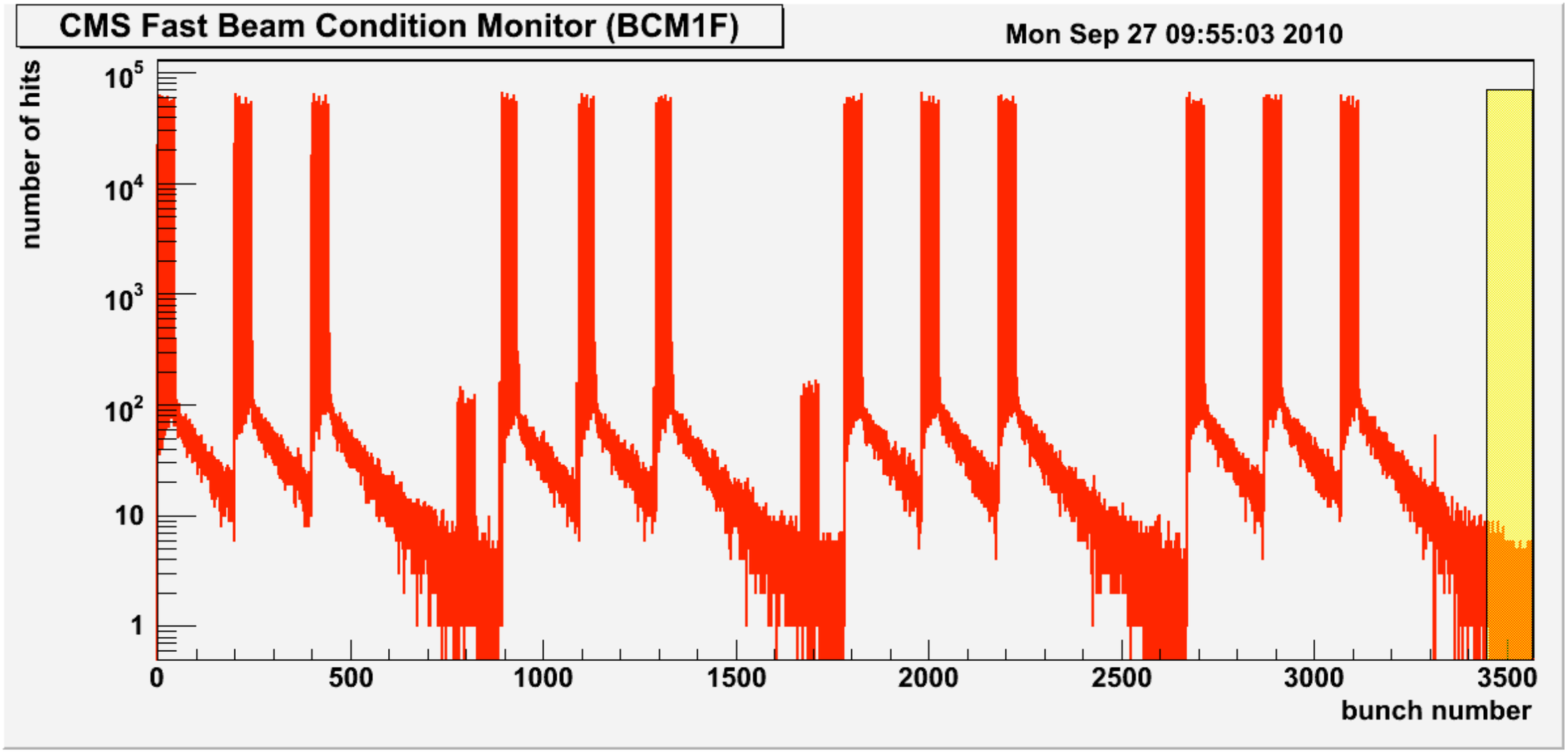
BCM1F TDCs

Roberval Walsh
DESY

FCAL CMS Weekly Meeting
27.09.2010

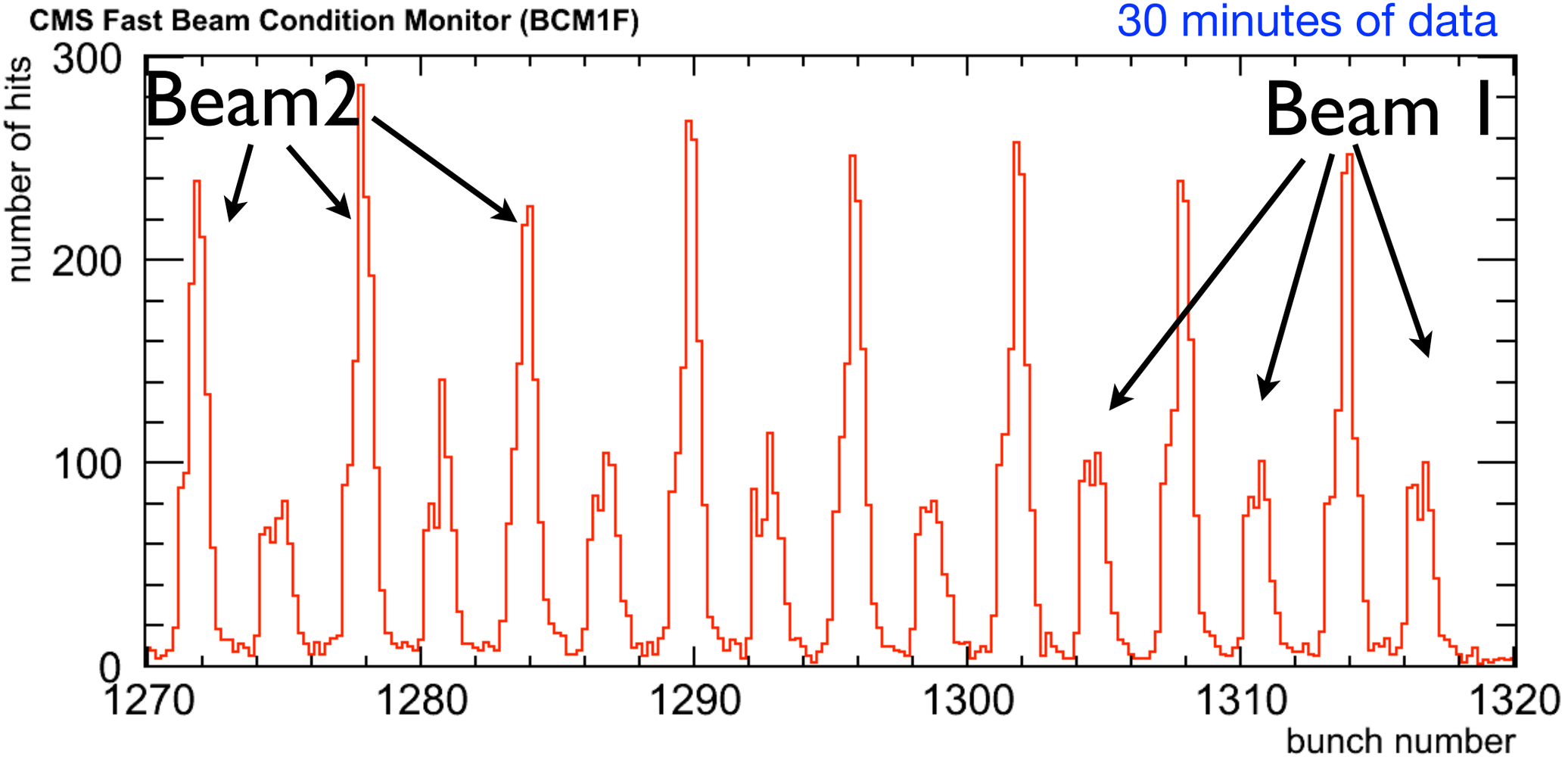
Bunch trains

- Since Saturday: 13 trains/beam, 8 bunches/train → 104 bunches/beam
- 93 bunches colliding at CMS.



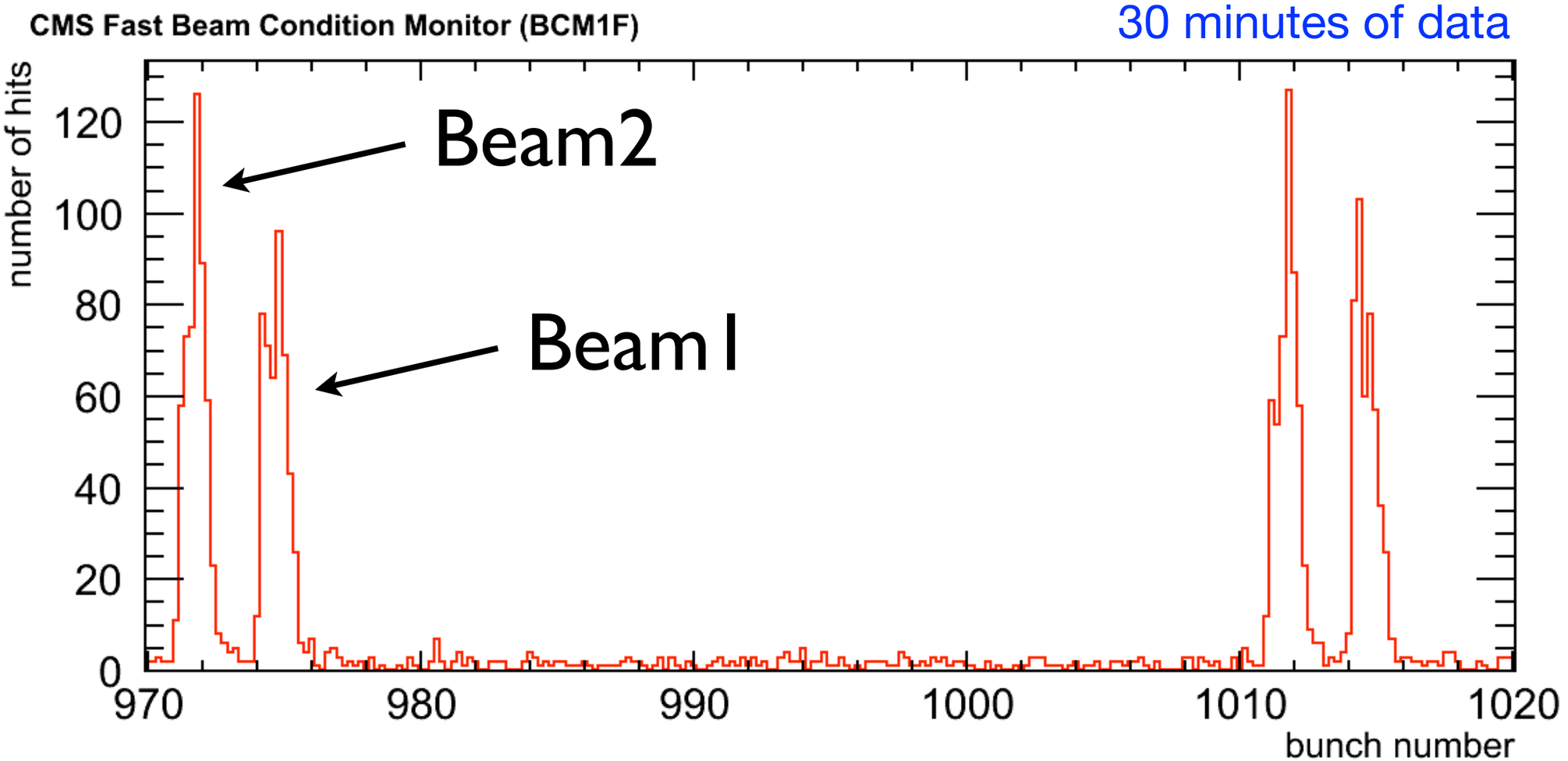
Backgrounds with trains

- Observed an asymmetry between beam1 and beam2 in non colliding-bunches. Reported by David at the Run Meeting on Friday (24.09).
  - Both beams have bunches with similar intensities.



Backgrounds with trains

- Comparison with August (non-colliding bunches).

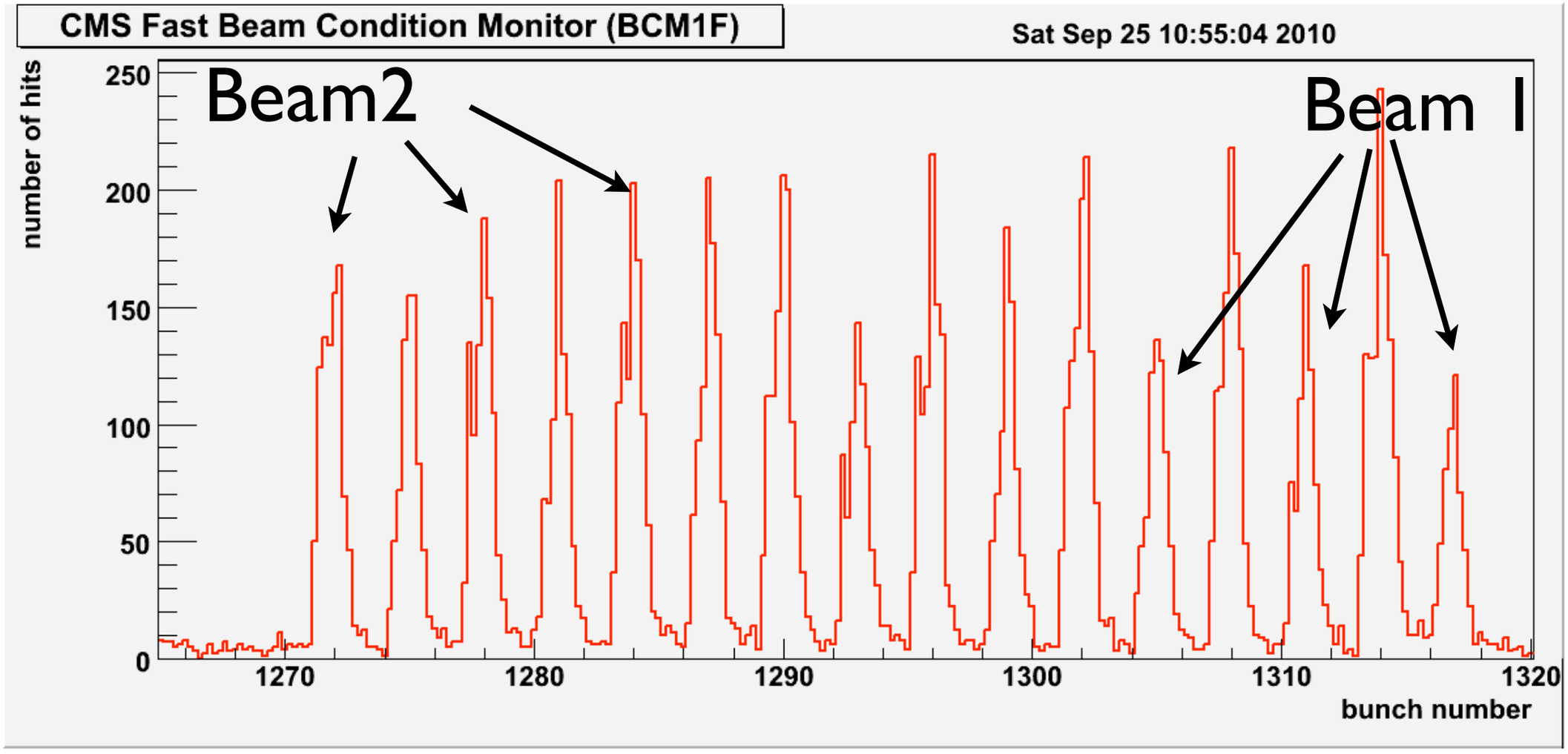


Backgrounds with trains

- Saturday (25.09) after the mini-scans and some optimization(?), before beams lost, rates from beam1 and beam2 were closer.

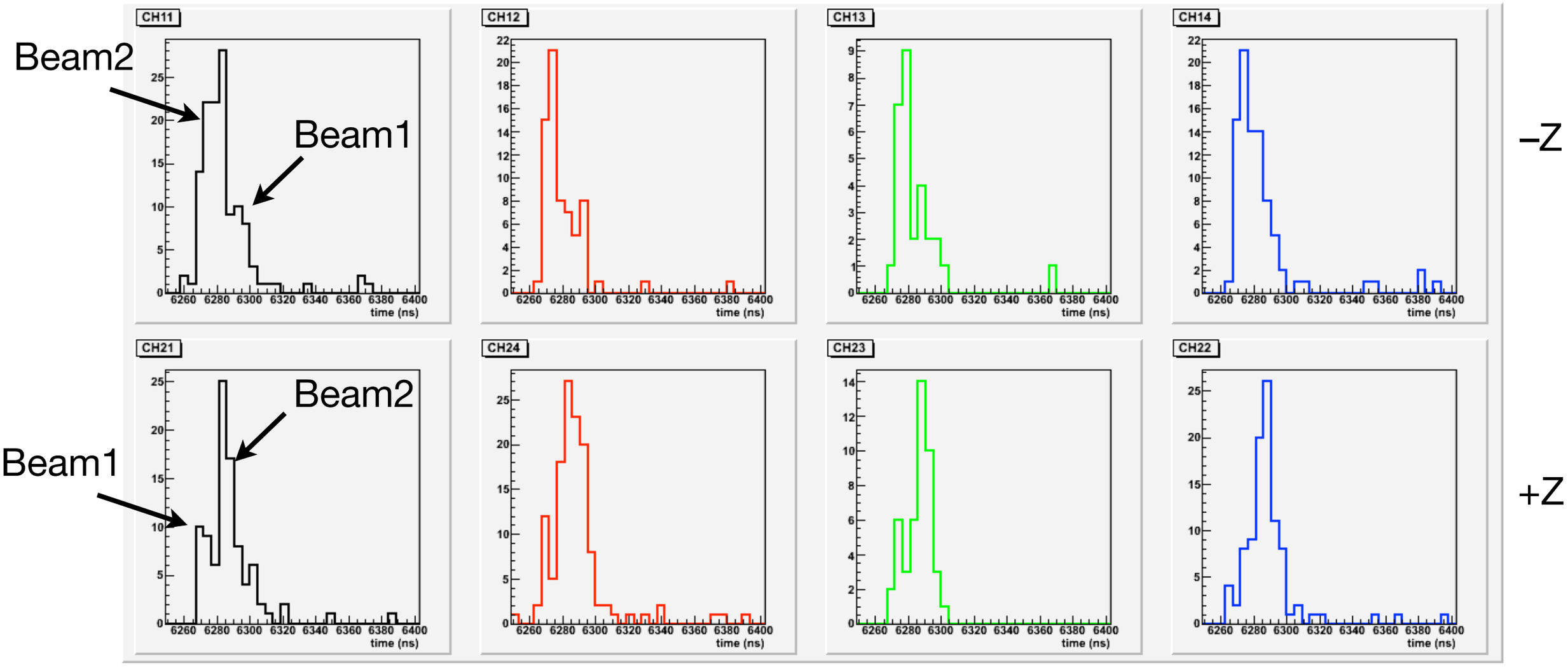
- Both beams with larger background???

30 minutes of data



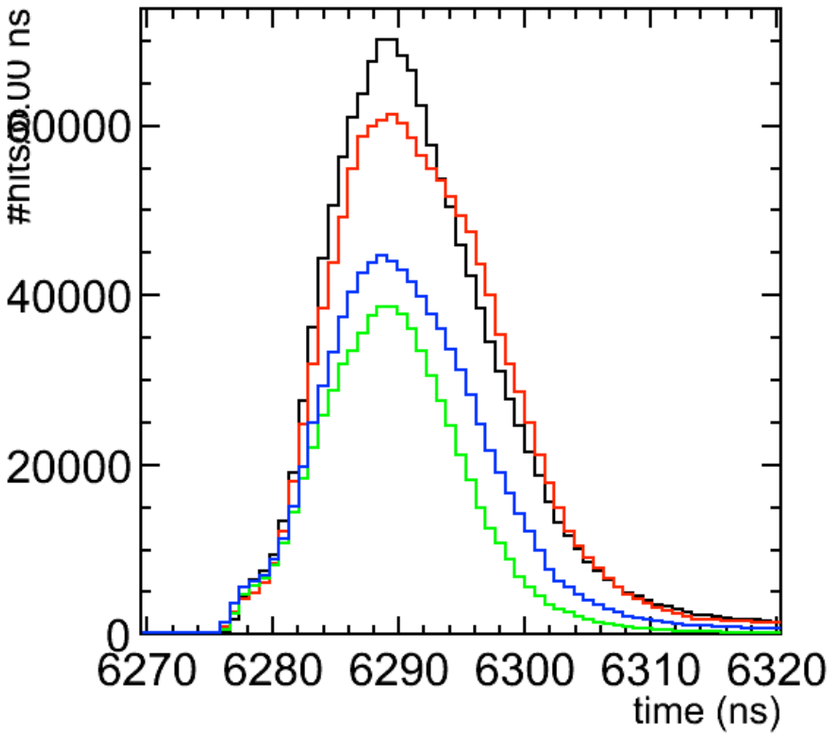
Backgrounds with trains

- **Collidable bunches**, i.e. bunches before being collided.
- Background from beam2 larger than from beam1



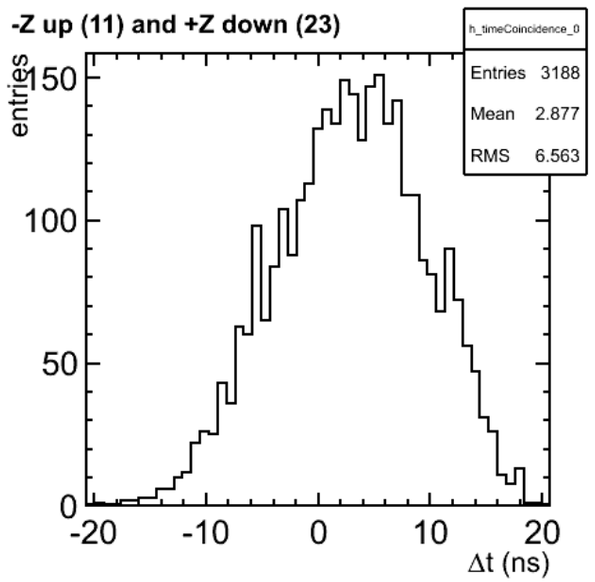
Brainstorming

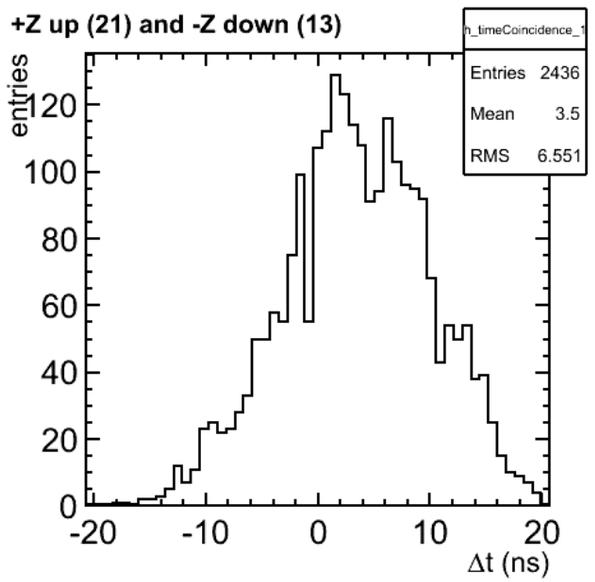
- Discussions with Richard and Nicola. Trying to understand some issues.
  - Why such a large spread of the time distribution? Width of 25-30 ns?
  - Why the gaussian rise to the distribution?
  - Tails understood to come from after-glow.
  - Known contributions: Resolution ⊕ jittering ⊕ bucket size ⊕ z-vertex would not give more tha
  - Discriminators: Ringo could you simulate the discriminators thresholds and look the difference of the signal time minimum and maximum?

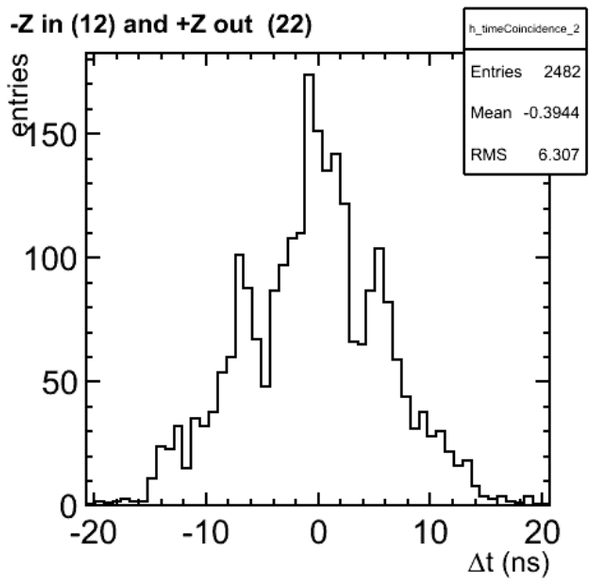


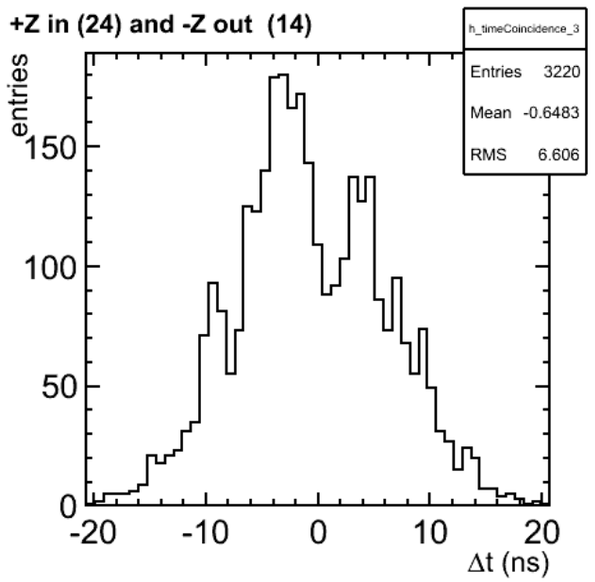
Brainstorming

- Why the relatively secondary peaks at ±6ns?
- Why more apparent for some channels and not the others?
- Ghost buckets would contribute to less than 1%.
- Backscattering?
- Systematic effects from the signals...







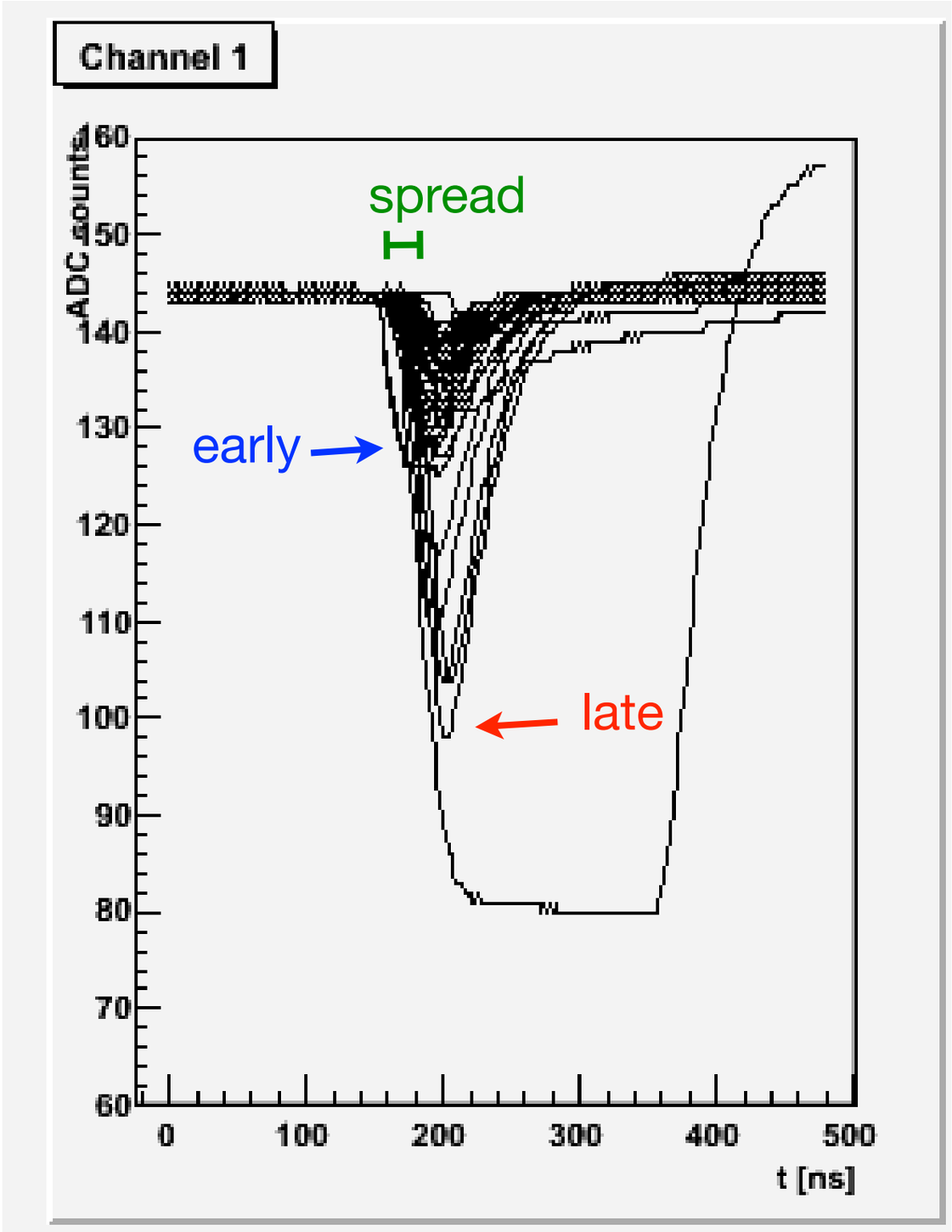


Brainstorming

- In any case, another contribution that seems to be large would come from late/ early signals.

- Could any of these late/early signals come systematically at 5-6 ns? Difficult to see from the plot.

- Ringo, could you plot the time of arrival or the time at the maximum of the signal with respect to the trigger? Are you using orbit trigger or bcm1f OR?



Paper

- Richard will create an SVN repository for the paper as many people will contribute.
- I will propose skeleton of the sessions next week in the BRM meeting.
- List of authors: everyone in the BCM1F workshop in Zeuthen + who else?
- LHC train running + heavy ion should be included.
- Plots still to be defined.
  - rates compared to luminosity?
  - bunch structure?
  - adcs signal in collisions, non-collisions, accidents?
  - ...