

9mA meeting on Sept data analysis:
how to comparing good and bad
pulses...?

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- **Proposed times of interest for analysis**
- **Model-Independent Analysis**
- **Update on DAQ data extraction issues**
- ***Discussion***

Aims of these analyses

- Compare ‘good’ pulses where there were no alarms with ‘bad’ pulses which were terminated early
- Understand what is different from pulse to pulse and/or within the bunch trains that caused the pulses to be terminated
- Many parameters to look at... where to start?
 - Orbits, blm signals, energy, charge, RF phase/amplitude in injector and main linac, bunch compression monitors, bunch phase monitors,...

First, pick some specific time periods to focus the analysis...
[see Preliminary list of ‘notable events’ by shift on wiki site]

Times of interest for analysis

- **Start by analyzing three particular times**

1. **Sept 18: 04:00 +/- window**

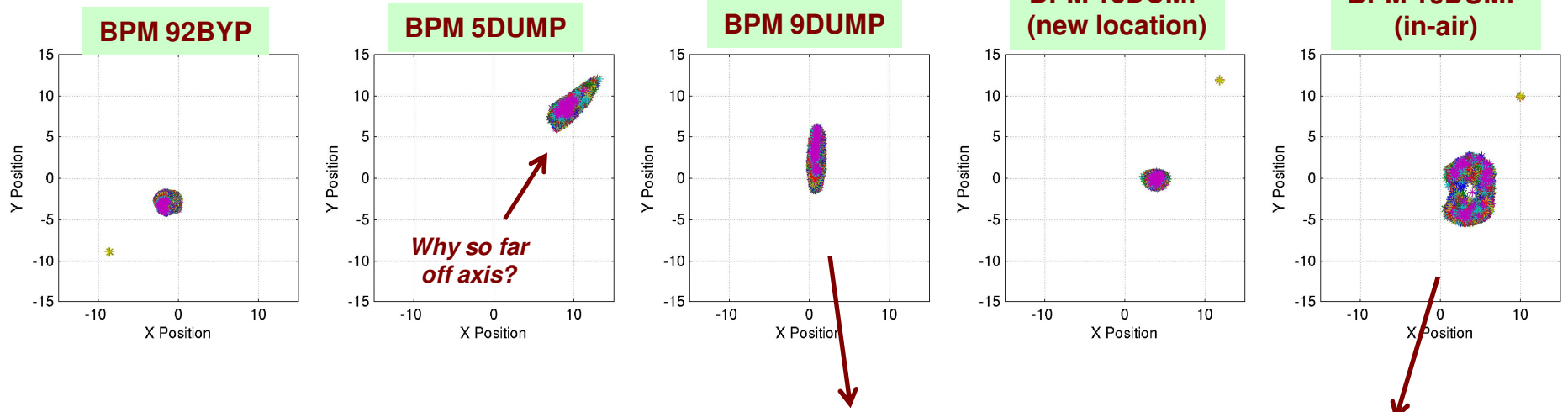
- 1MHz rep rate, attempting to get to 800 bunches
- Charge droop after 600 bunches was fixed at 04:00 and we immediately got to 800 bunches

2. **Sept 13: overnight shift**

- Running ~150 bunches at 200kHz, lot's of alarms
- Strong correlations evident between blm and energy profiles during the bunch train

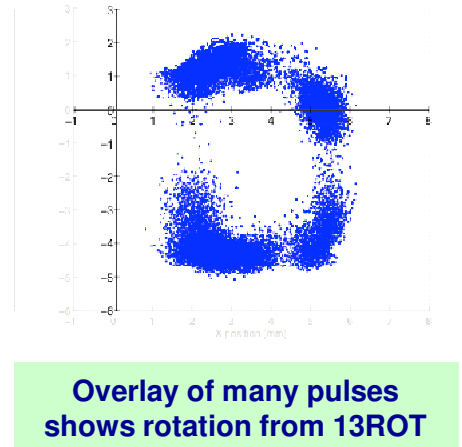
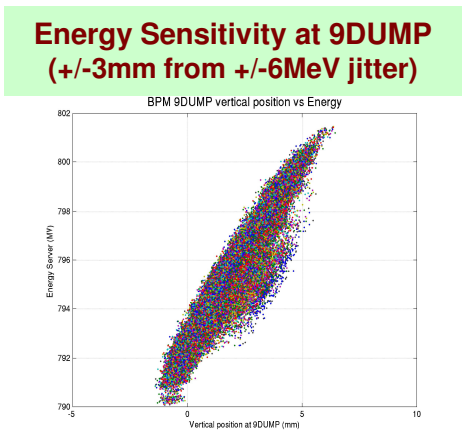
3. **Pick a period during the evening/night of Sept 20th (last two shifts)**

Orbit in dump-line example from Sept 20th: (~200 pulses, many bunches at 3MHz)



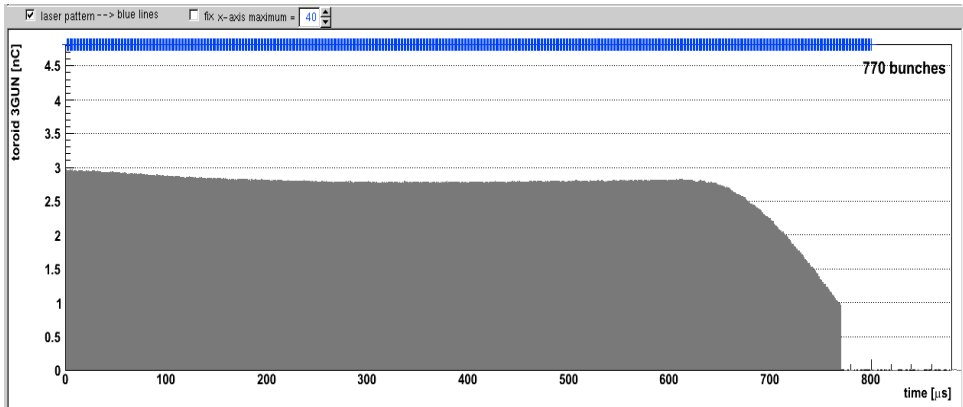
DAQ data analysis to study...

- *If this really is a good working point*
- *If we had the right energy...*
- *Why so far off axis at 5DUMP...*

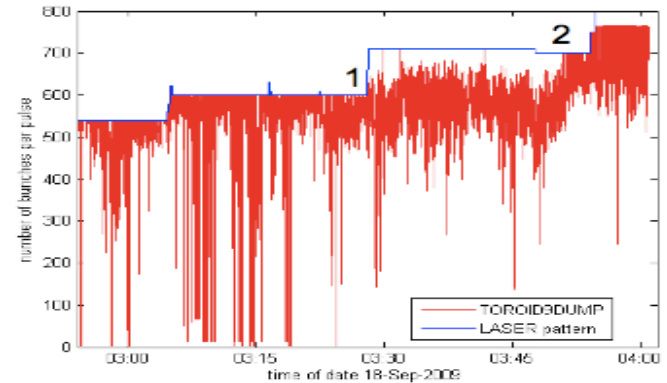


Laser timing adjustments on Sept 17n shift (Sept 18, 03:00-05:00)

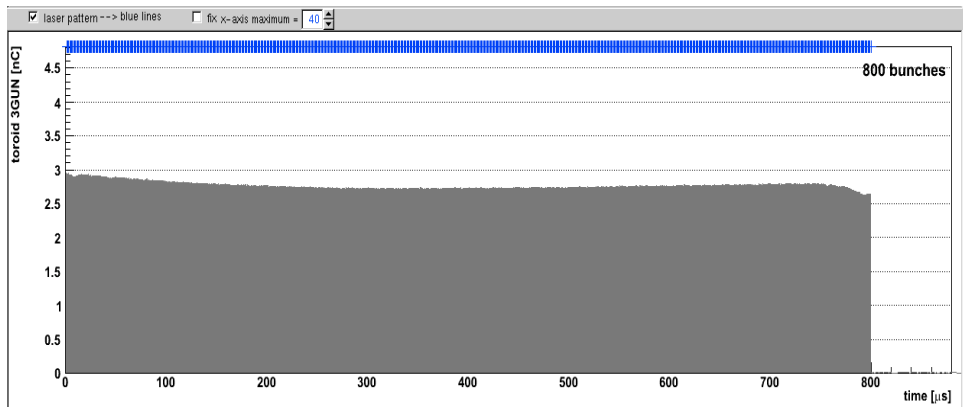
Charge per bunch at 03:58



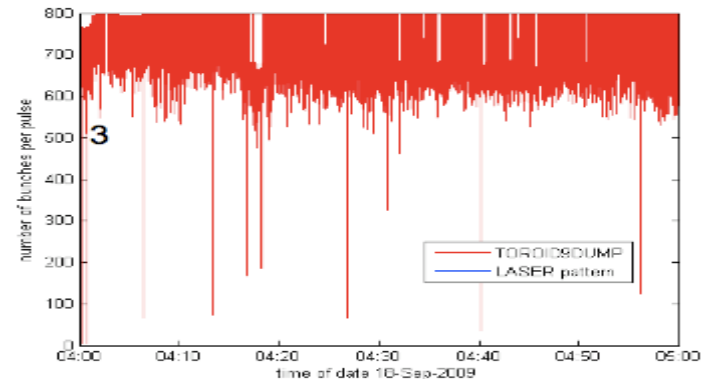
Number of bunches 03:00-04:00



Charge per bunch at 04:01 after laser adjustments

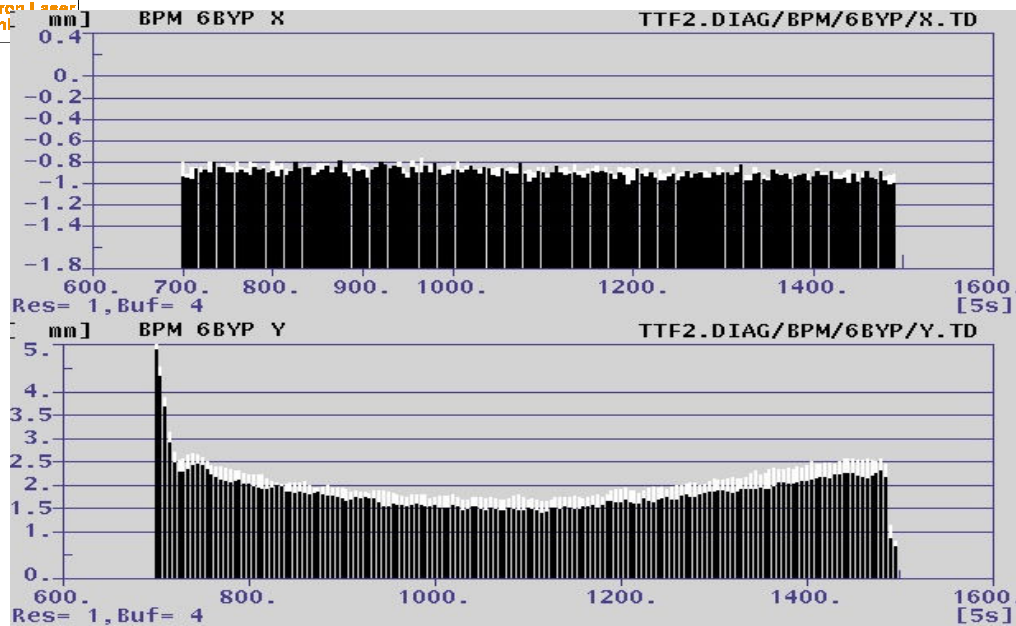


Number of bunches 04:00-05:00



- We immediately got 800 bunches after fixing the charge droop
- Why? Orbit changes, energy changes,... ?

Energy vs position at 6BYP (Dispersion..?)



- Data from Sept 13n logbook
- Timestamp: Sept 14, 02:58
- Logbook reports many blm alarms
- Candidate for analysis

