Transition instability modes

M.Blaskiewicz ,R.Connolly, W.Fischer, Y.Hao,
R. Lee, V.Ptitsyn, S.Tepikian, S.Y.Zhang

Two ramps have been done during the studies.

- 103 bunch pattern with two mini-gaps. It should allow to make better comparison with last year data.

➢ Yellow ~1.2 e9 Au/bunch

➢ Blue ~0.9 e11 d/bunch

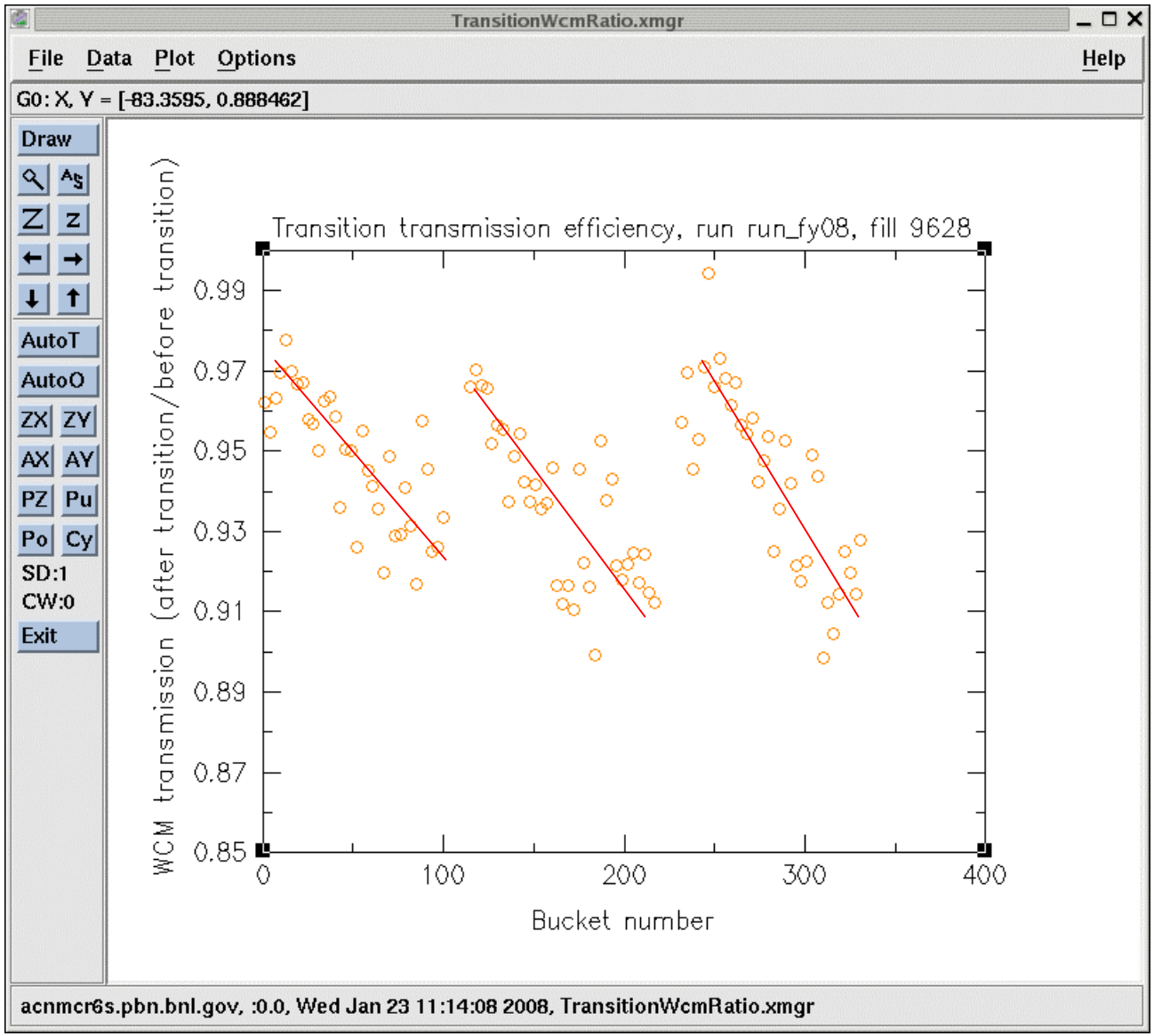
- Different button BPM settings on two ramps:

❖ Ramp 1: ~800ms total acquisition window with ~3.3ms between acquisition sequences.

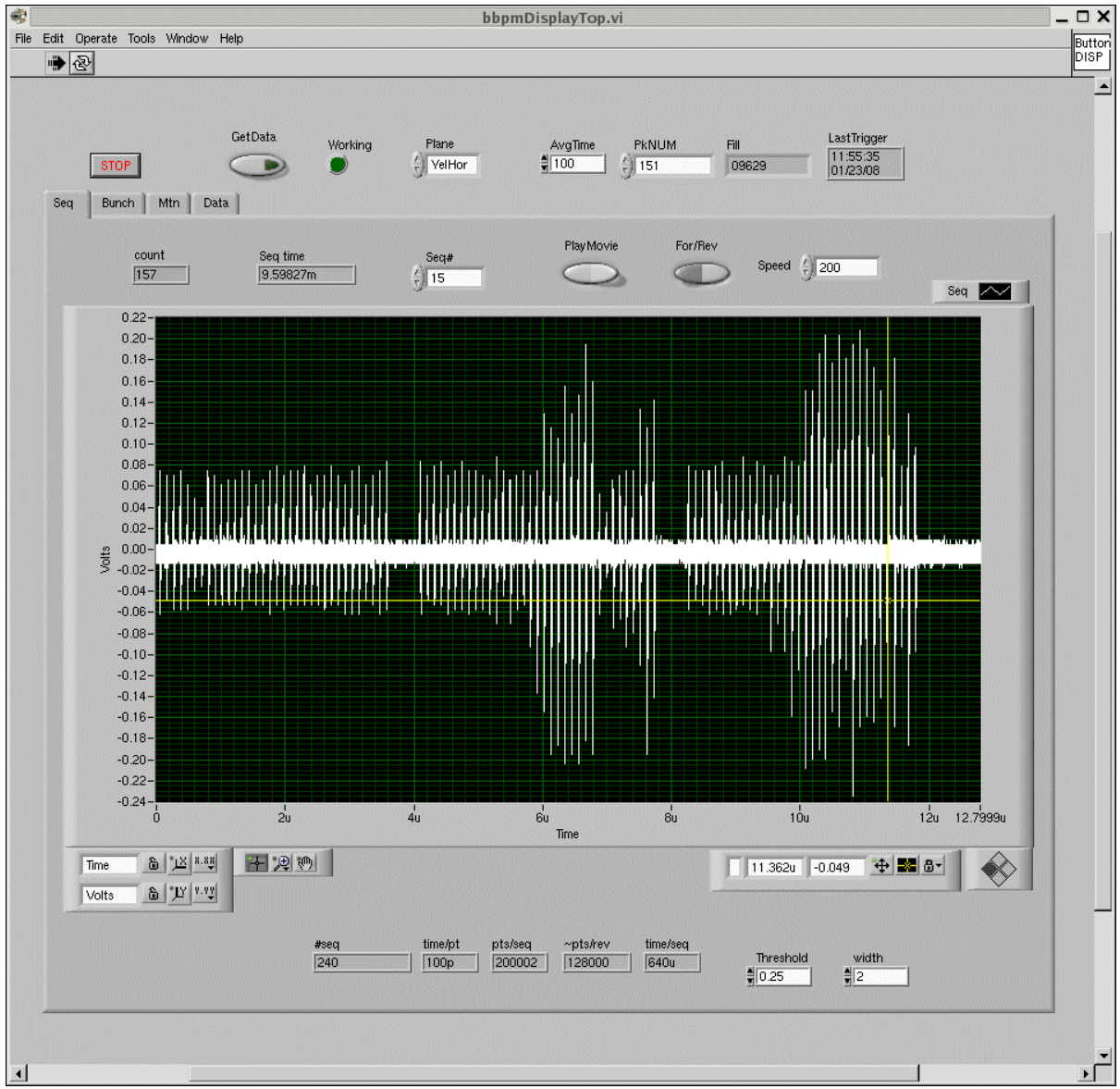
❖ Ramp 2: ~150ms total acquisition window with ~0.65ms between acquisition sequences (zoom in on the instability!).

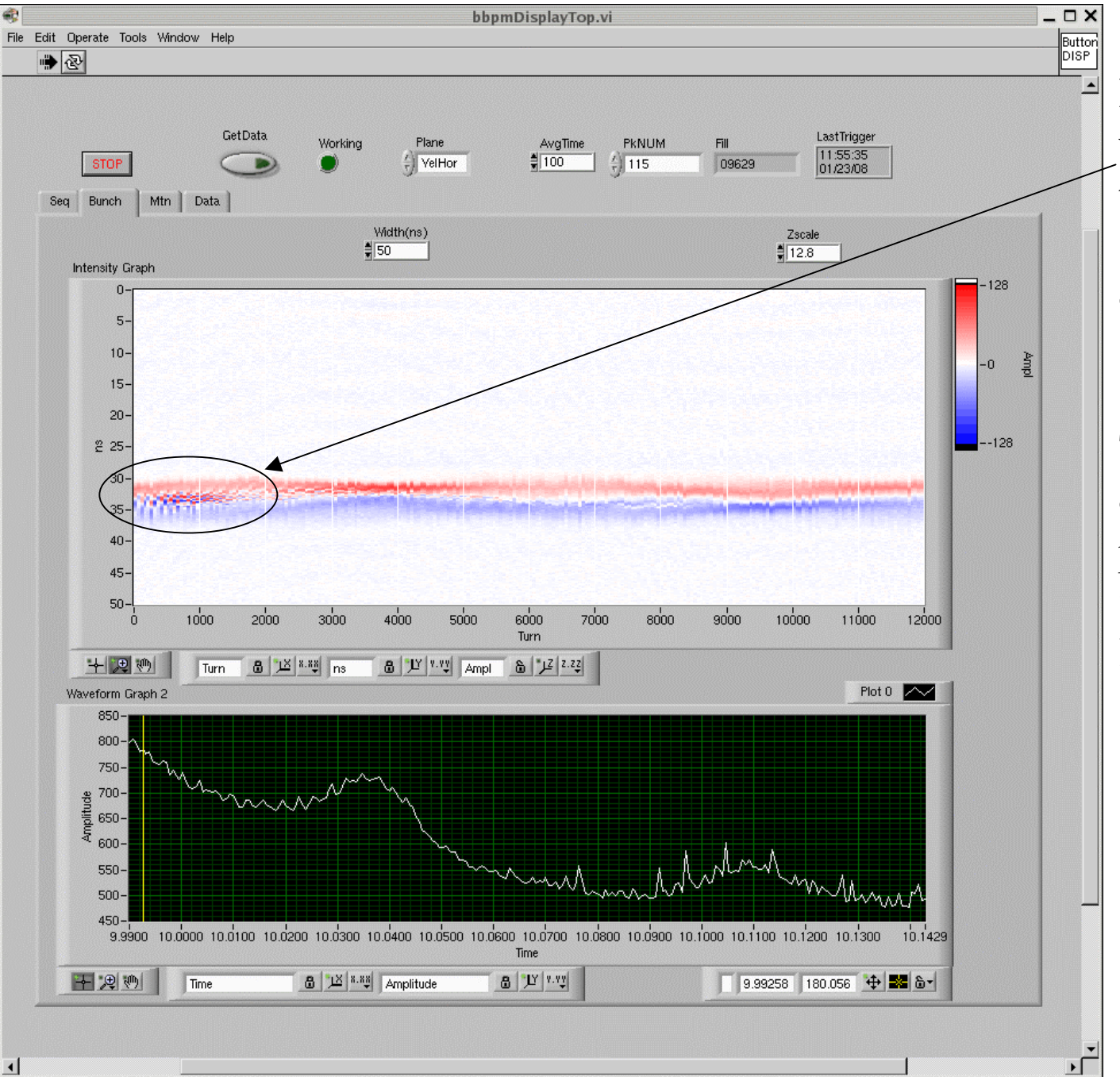
Resolution: 0.1 ns per point.

Bunch intensity loss through the transition is distributed as expected for two mini gap pattern



Example of button BPM data:
tails of mini-trains affected by the instability





Instability development was clearly seen in the button BPM data, especially on second ramp.

Timing of the instability depended on the bunch position:
further from the tail – later instability time

- IPM, WCM, Vacuum and Transition Monitor data also collected.

- Goals of the oncoming data analysis:

➢ Study details of the instability mode development and mode frequencies

➢ Dependence of the instability characteristics on bunch position -> the role of electron cloud.

➢ Comparison with the simulations of ion-electron cloud interactions.

➢ Output for possible feedback development.