

Two stepp extraction of CNGS Beam from the SPS

**status of MKE kicker and transverse damper
activity presented at LCE section
meeting by E. Vogel**

8th October 2004

Description of the problem

CNGS beam will be ejected from the SPS in two batches causing residual oscillations by kicker ripples on the second batch. This second batch continues to circulate for 2167 turns after the first batch has been extracted and oscillations are damped by the feedback system.

Status of so far

- simulations done at the first half of 2004
Result: feedback is able to cure the MKE kicker ripple
- simulation result published at EPAC 2004
- set up of MDs during September 2004
- extraction kicker damper test performed at 23rd September
- first preliminary results...

Attention!

The following results are preliminary and the error bars of the amplitudes shown are still under discussion, especially at the beginning and the end of the batch!

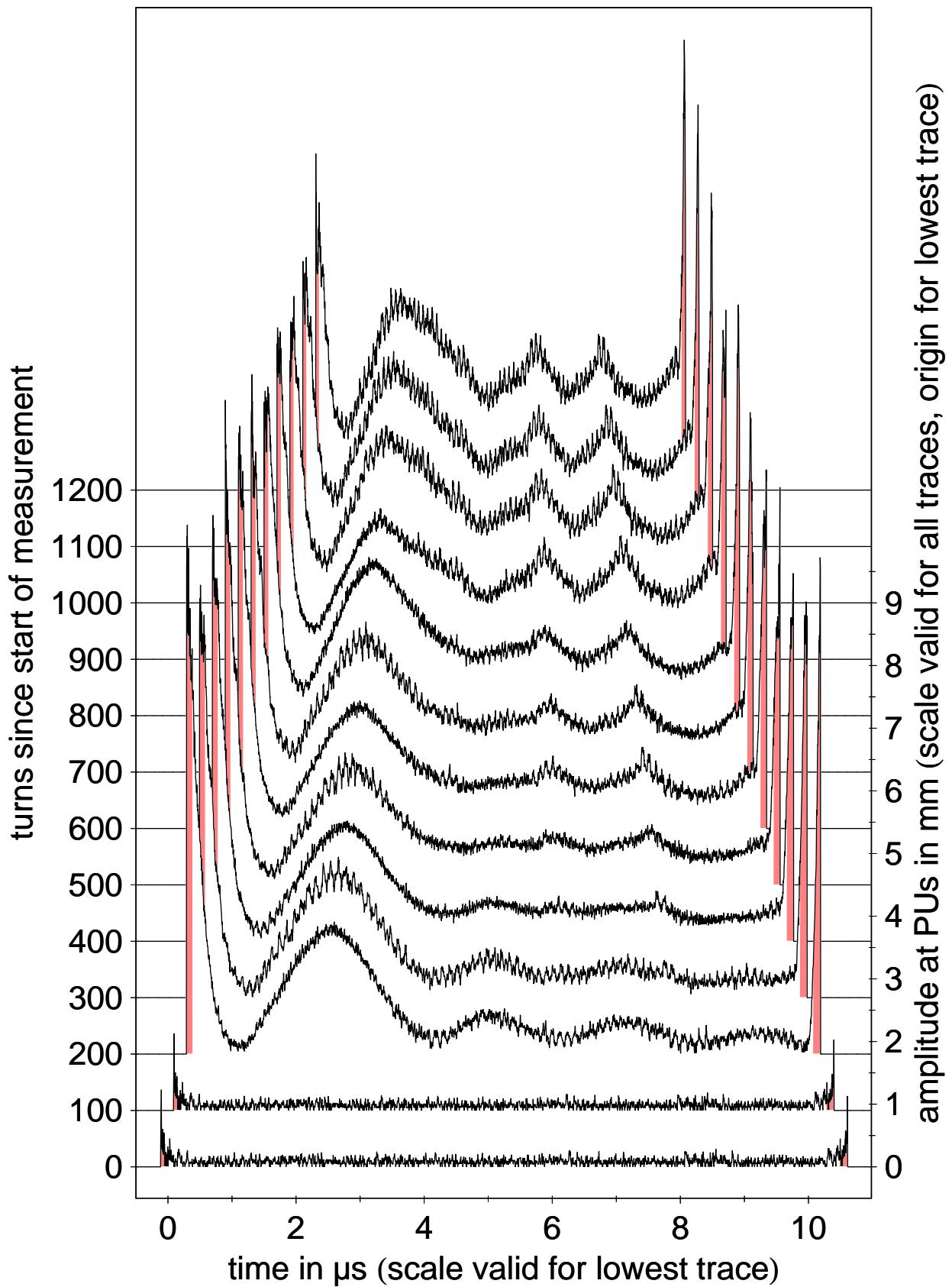
The figures show

- the second batch, whereas the MKE kicker is fired for the extraction of the first batch. The first batch was not present at the MDs.
- situation at high (nominal) intensity – 2.5×10^{13} protons/batch
- CNGS target constraint correspond to 0.5 mm at the pick-ups
Scaling:

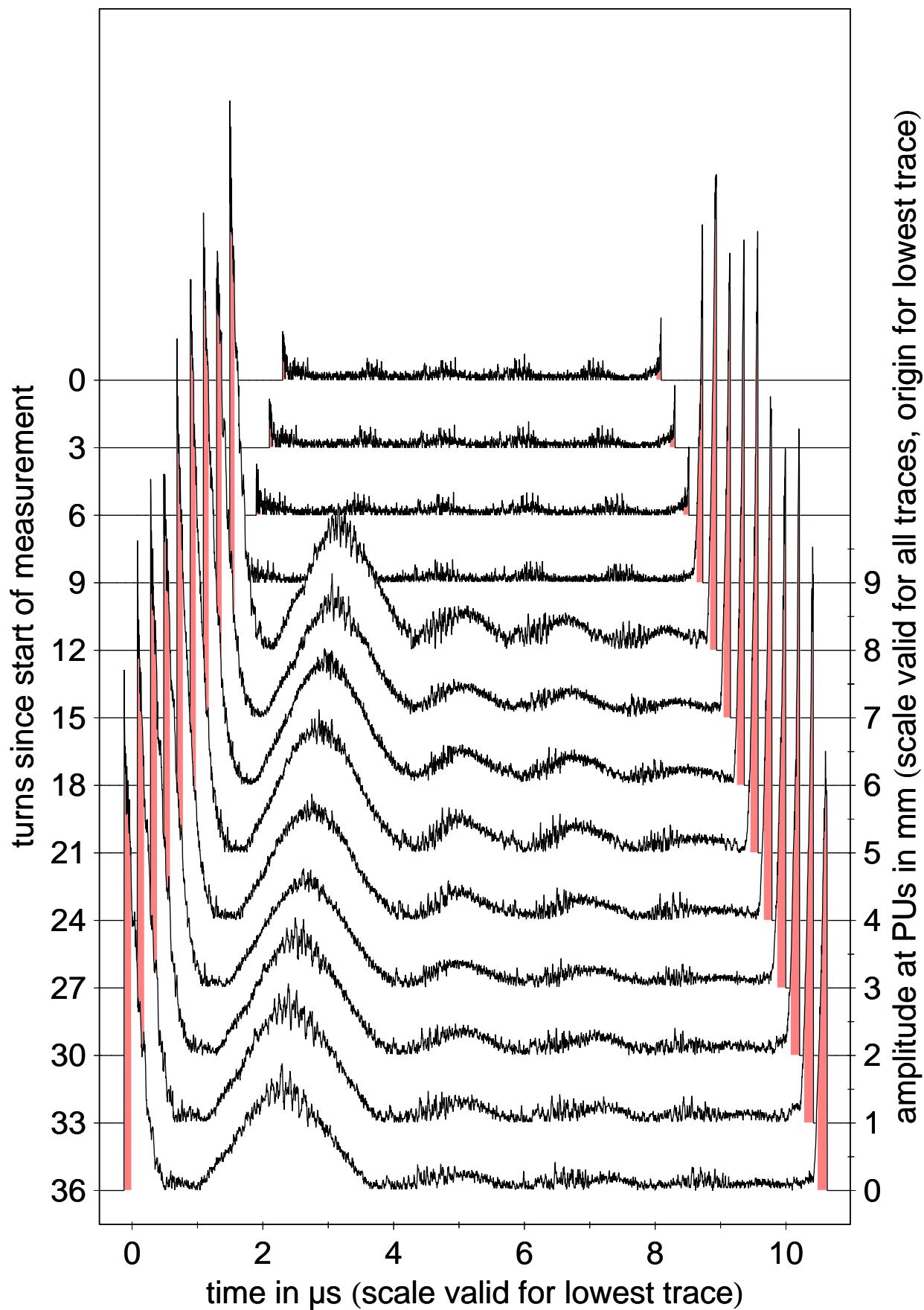
$$\frac{|x_{pu}|}{\text{mm}} = 88 \times \frac{\varphi_{\text{kick}}}{\text{mrad}}$$

- MR213: feedback off → beam unstable, complete batch out of the CNGS target constraints
- red parts: bunches out of specified batch (2100 bunches) with more than 10% of the average bunch intensity in the batch core
- MR221: feedback on → beam damped, situation at MKE-Kick
- MR223: the batch core is completely damped within 120 turns
- MR228: oscillations at the beginning and the end of the batch, caused by the MKE kick, are damped before the second extraction (2170 turns later) would take place

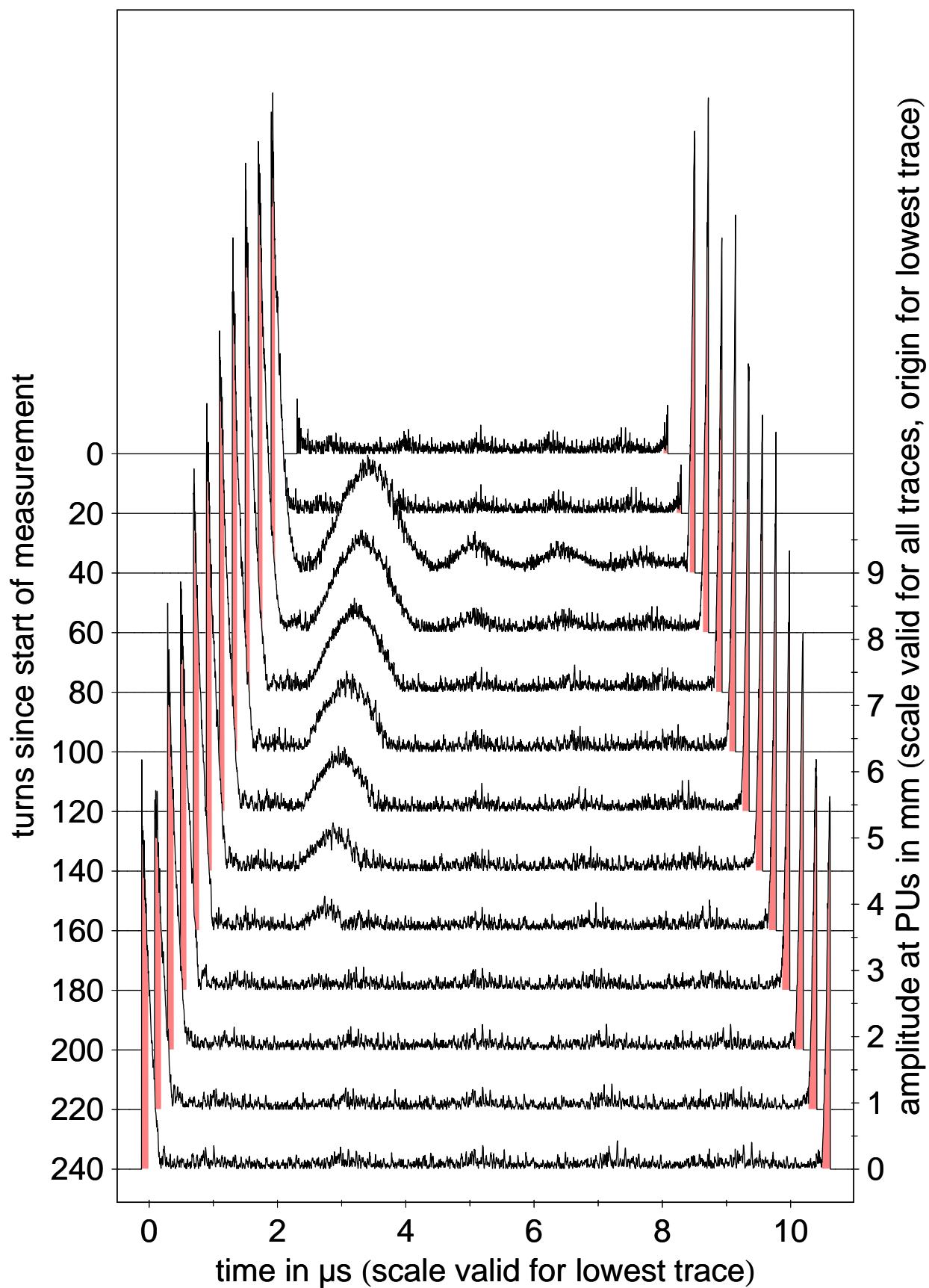
MR213–AbsAmpData.csv from MD at 23th September 2004



MR221–AbsAmpData.csv from MD at 23th September 2004



MR223–AbsAmpData.csv from MD at 23th September 2004



MR228–AbsAmpData.csv from MD at 23th September 2004

