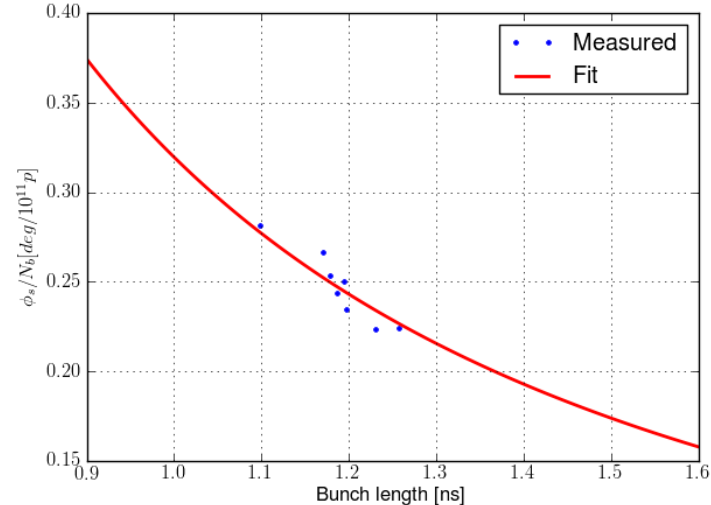
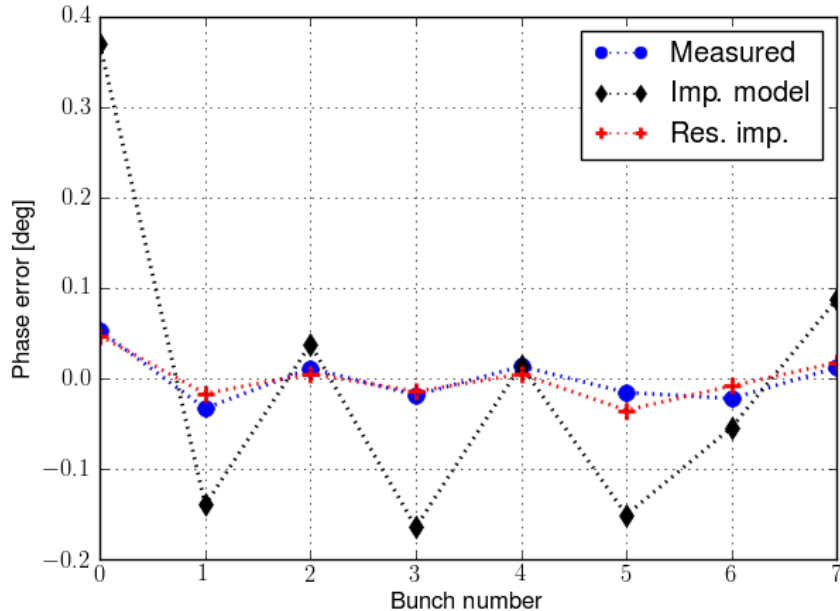


# Measurement of LHC longitudinal effective resistive impedance

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# Phase shift measured in MD, May 2011: preliminary results (J. Muller et al.)



- Significant deviation from prediction based on existing impedance model (thanks to N. Mounet)
- Only small ranges in bunch length (< 20%) and intensity (fluctuations) were covered, **need more data!**

# Experimental conditions

- LHC: 450 GeV/c, Beams 1&2, initial request 6h, but 2h could be already useful  
8 bunches per ring (9 equally spaced buckets) + pilot, nominal transverse emittance
- SPS:
  - controlled emittance blow-up in range 0.3 -1.0 eVs
  - scrapping of high intensity in range  $0.5 \times 10^{11}$  -  $2.0 \times 10^{11}$
- 3-4 fills, each with constant longitudinal emittance and variable intensity bunches (each fill with different longitudinal emittance)
- Other parasitic measurements possible:
  - transverse emittance blow-up (need longer time)
  - PD Schottky for longitudinal incoherent frequency shift with intensity (reactive part of impedance)
  - on FT if ramp is included