

Longitudinal dynamics studies

MD period - 2:00-8:00 am on Wed 20.06.2012

- **Potential participants:** T. Argyropoulos, P. Baudrenghien, T. Bohl, C. Bhat, A. Burov, R. Calaga, J. Esteban Muller, T. Mastoridis, E. Metral, N. Mounet, V. Kain, G. Papotti, F. Roncalo, B. Salvant, E. Shaposhnikova, H. Timko, U. Wehrle +...
- **Purpose of this MD is to measure at different energies**
 - LHC impedance via
 - stable phase shift (longitudinal resistive part)
 - peak detected Schottky (longitudinal reactive part)
 - tune shift (transverse reactive part)
 - different settings (TDI, collimators)
 - Loss of Landau damping as a function of bunch length and intensity (with phase loop off)
 - Transverse emittance evolution as a function of intensity and bunch length (IBS)

Experimental conditions

LHC

- Beams 1&2, 8 bunches per ring (9 equally spaced buckets) + pilot
- 450 GeV (phase loop off):
 - 1 fill with constant long. emittance (min) and variable intensities
 - 1 fill with constant intensity (max) and variable long. emittances
- Ramp: 1 fill with constant intensity and transverse emittance and variable longitudinal emittance. The phase loop is “on” during injections and then it is “off” during the ramp (which starts when all oscillations are damped)

SPS

- controlled emittance blow-up in range 0.3 -1.0 eVs
- transverse scrapping at 420 GeV/c of bunches in range 0.5×10^{11} - 2.2×10^{11}

PS

- high intensity bunches $\sim 2.2 \times 10^{11}$ with constant (nominal) longitudinal and transverse emittances (0.3 eVs, 2 μm)