Contribution ID: **21** Type: **Poster**

New CERN PS 10 MHz Cavity One-turn Feedback Hardware and Beam Tests

To reduce beam loading in the accelerating cavities of the CERN PS, a oneturn delay feedback (FB) provides significant impedance reduction at revolution frequency harmonics in addition to the direct wide-band FB. This new FB developed within the LHC Injector Upgrade project is based on the LHC one-turn delay FB electronics. The new hardware is able to cope with the sweeping revolution frequency in the PS, as well as with changing harmonic numbers. A unique clock at a fixed harmonic of the revolution frequency, ranging from 35 MHz to 96 MHz, is used. The signal processing features an IIR notch filter, programmable to any harmonic number, combined with a comb filter and a glitch-free variable delay. This delay consists of a FIFO memory with fine delay chains to complete the full revolution period. Moreover, a digital voltage control loop is being added to the firmware, with non-IQ sampling technique to detect amplitude and phase of the cavity voltage. Tests with beams are presented with the full commissioning on all 11 cavities foreseen for the start-up in 2014.

Primary author: Mr PERRELET, Damien (CERN BE-RF-FB)

Co-author: Mr DAMERAU, Heiko (CERN)

Presenter: Mr PERRELET, Damien (CERN BE-RF-FB)