Latest Performance Results from the FONT5 Intra-train Beam Position and Angle Feedback System at ATF2

Feedback loop:

Digital feedback processor:

Xilinx Virtex5 FPGA
Clocked at 357 MHz phase-locked to beam
9 ADC input channels (TI ADS5474)
4 DAC output channels (AD9744)

Beam test results:

coupled loop gain studies

Position in P2
Created gain scans - P2 bunch 2
Percentage of normal K2,P2 & K1,P1 gain

Created gain scans - P2 bunch 2
Coupled gain scans - P2 bunch 2

Position in P3
Created gain scans - P2 bunch 2
Percentage of normal K2,P2 & K1,P1 gain

Created gain scans - P2 bunch 2
Coupled gain scans - P2 bunch 2

K1 gain
K2 gain

coupled loop FB performance

Position Jitter in P2
Position Jitter in P3

bunch 1 2
FB off on FB off on Pred.

Jitter P2 3.42 3.39 3.42 0.64
1-2 correl 98%

P3 3.24 3.16 3.21 1.04
1-2 correl 97%

Position Jitter in P2
Position Jitter in P3

Jitter P2 3.42 3.39 3.42 0.64
1-2 correl 98%

P3 3.24 3.16 3.21 1.04
1-2 correl 97%

downstream performance

Coupled feedback allows a feedback correction to be maintained over an extended distance down the extraction line