Helicity Magnets’ Control Upgrade

December 27, 2011
Today’s Controls

I. Both nHelicity Flip and T_Settle fibers are sent to Controls. T_Settle is not used.

II. DAC of -8000 → 8000 gives -50 mA → 50 mA

III. Slopes of about 0.1 µm/DAC in the 5 MeV region
I. Output Select: Helicity Mode, 30 Hz Beam Mode, Manual

II. Remove few features – marked by X
Checked Magnet’s Voltage on Scope
Overshoot, Rise Time & Delay

Even Setpoint = 8000
Odd Setpoint = -8000
Output Noise

Even Setpoint = 0
Odd Setpoint = 0

MHE0L01V
nHelicity
Flip
T_Settle

CH1 50.0mV CH2 1.00V
CH3 100mV

11-Aug-11 01:59 480.013Hz
Changes to Controls

I. Overshoot: Reduce Overshoot to be less than 10% of the Setpoint

II. Rise Time: Increase Rise time from about 4 µs to 10 µs

III. Reduce the delay between the nHelicity Flip and magnet output from 17 µs to less than 1 µs

IV. Output Noise: Reduce output noise to less than 1% of the setpoint at all frequencies

V. Change to 16-bit DAC to reduce slopes to be about 0.01 µm/DAC