Towards the creation of a constant intensity pulse.

This document describes the equipment and NIM electronics for making creating an intensity vs time signal.

The performance of the Phase 2 proton Computer Tomography scanner (pCT2) is highly dependent on the spill intensity. To control this vital parameter, feedback is necessary; thus, we detail the setup and instructions for a simple time vs intensity signal.

The detector should be placed in the beam and powered by -800V. Since this detector is relatively insensitive to the background radiation in research room, the signal not discriminated but sent (via the patch panel) and split between the Orteck 673 Amplifier and the oscilloscope (see Fig. 1). The course gain and fine gain were set to their minimum values, and the BLR switch was set to THRESH. Output from the Gate Integrator (GI) to the scope channel 2 of the scope. The scope was set to trigger on the detector input, and the relative amplification of the blue curve is 10x.

Fig. 2 shows the relative output of the detector (see arrow) in yellow Channel 1 (Ch1) and the gate integrated pulse in blue Ch2. The relationship of these must be adjusted based on the beam intensity via the shaping time (lower row of knobs) in the amplifier. The GI Shaping Time changes the height of the blue curve and the Amp Shaping Time determines the time window of the blue curve.

Fig. 1 The detector signal is split between the amplifier [INPUT] and the oscilloscope. The output from the Gated Integrator (GI) also goes to the oscilloscope.

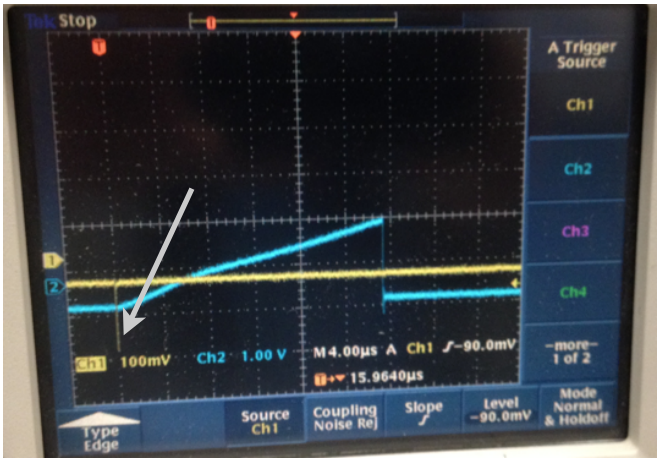

Fig. 2 The scope is triggered by the detector signal in Ch1 (see arrow). The Gated Integrator [GI] (magnified 10x) must be tweaked via the GI & Amp Shaping Time.