

Abstract Submitted
for the APR16 Meeting of
The American Physical Society

A Computer Program to Measure the Energy Spread of Multi-turn Beam in the Fermilab Booster at Injection¹ JOVAN NELSON, Brown Univ, CHANDRASHEKHARA BHAT, BRIAN HENDRICKS, Fermi National Laboratory — We have developed a computer program interfaced with the ACNET environment for Fermilab accelerators in order to measure the energy spread of the injected proton beam from the LINAC, at the energy of 400 MeV. This program allows the user to configure a digitizing oscilloscope and timing devices to optimize data acquisition from a resistive wall current monitor. When the program is launched, it secures control of the oscilloscope and then generates a “one-shot” timeline which initiates injection into the Booster. Once this is complete, a kicker is set to create a notch in the beam and the line charge distribution data is collected by the oscilloscope. The program then analyzes this data in order to obtain notch width, beam revolution period, and beam energy spread. This allows the program to be a possible useful diagnostic tool for the beginning of the acceleration cycle for the proton beam.

¹Thank you to the SIST program at Fermilab

Jovan Nelson
Brown Univ

Date submitted: 11 Jan 2016

Electronic form version 1.4