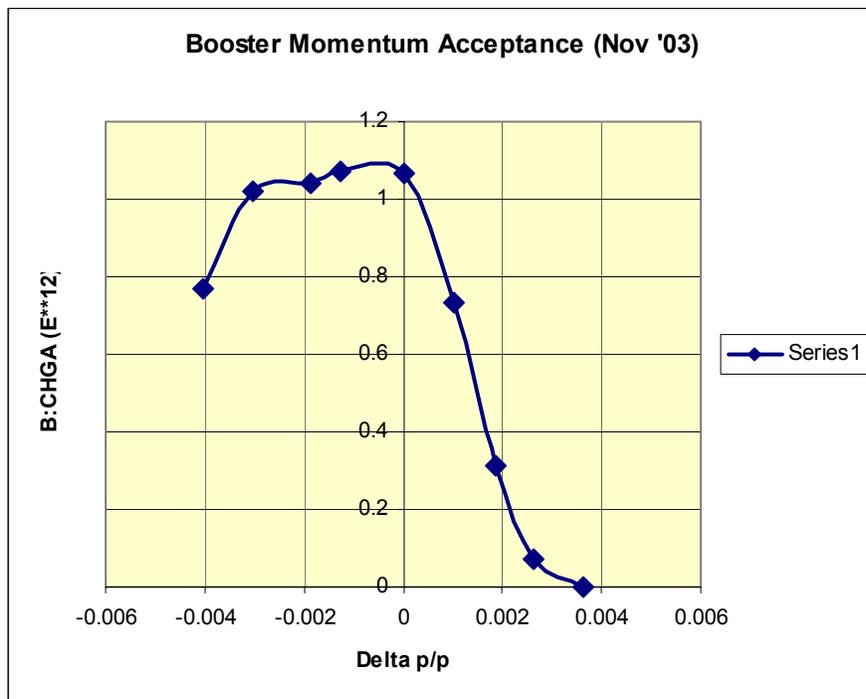
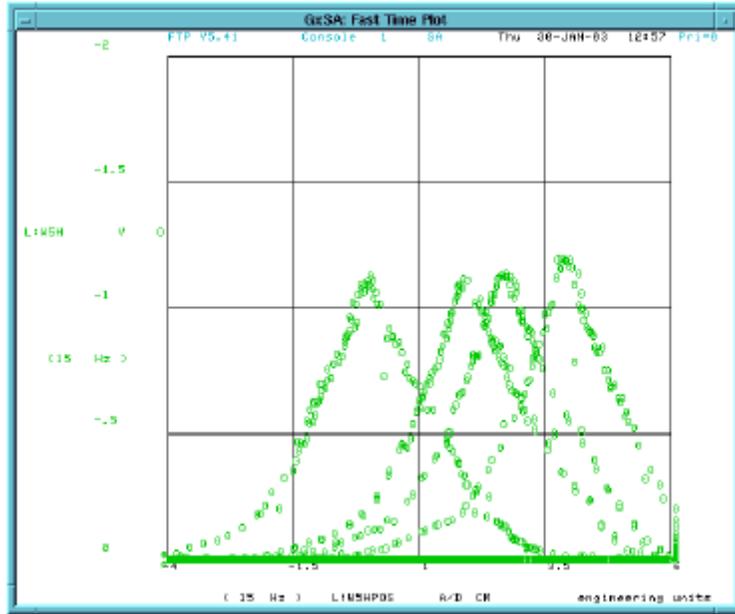
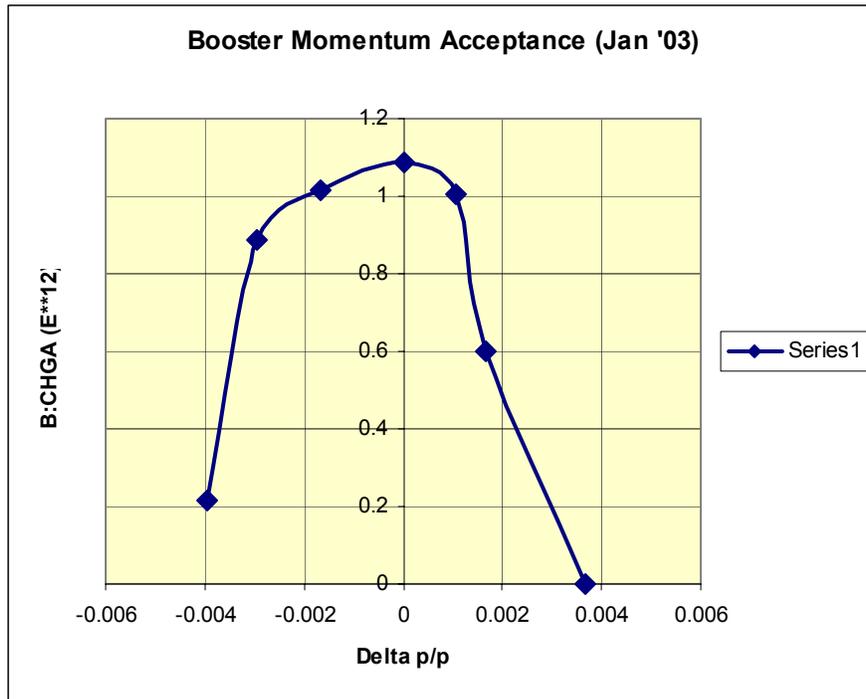


# Longitudinal Acceptance Measurement (Nov 11, 2003)

Method 1 – Varying linac beam energy (Calibration: 1 cm = 1 MeV)



Compared with the January 2003 measurement:



It is seen that there is no noticeable change in the two measurements.

Explanation: This method measures the combined longitudinal acceptance of the 400 MeV line (which was not retuned when the linac beam energy was varied) and the Booster. There is evidence that the limit could be attributed to the mismatch between the 400 MeV line and the Booster - The horizontal orbit at the first few BPMs of the Booster has large deviation ( $> 40$  mm) when  $dp/p$  is large.

### Method 2 – Varying ROF of the Booster:

This shows a significant increase in momentum acceptance in this measurement compared with the January 2003 results:

The largest  $dp/p$  allowed having beam in the Booster at 400 MeV ( $dp/p$  value obtained from the orbit program for different ROF):

Jan 2003:  $dp/p = [-0.13\%, +0.22\%]$

Nov 2003:  $dp/p = [-0.28\%, +0.53\%]$