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Linac to Booster (LTB) Steering

N. Williams

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Collider Accelerator Department

Brookhaven National Laboratory

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USDOE Office of Science (SC)

DISCLAIMER

AGS Complex Machine Studies (AGS Studies Report No. 331) Linac to Booster (LTB) Steering
Study Period: 0900 to 1100, June 20, 1995
Participant(s): N. Williams
Reported by: E. Bleser
Machine: HEBT and LTB Lines
Aim: To determine the effectiveness of the detectors and steerers in the HEBT and LTB lines.

SUMMARY

The standard MAD model of the line from the Linac to the Booster was used with the present current setpoints to generate a set of matrices that transformed the vertical position measurements in a pair of beam position monitors into a set of currents for a pair of vertical correction dipoles. Several iterations in each of three sets of detectors and steerers produced a beam that was flat to a fraction of a millimeter.

CONCLUSIONS

The details of the LTB will be recorded elsewhere. The detailed calculations for this experiment are not of general interest since the experiment was intended as a proof of principal. Figure 1 shows the vertical orbit before and after the steering. Since the steering was done entirely by calculation and modelling, our conclusion from Figure 1 is that the principal is proven. The steering magnets and detectors are of sufficient accuracy to flatten the beam by modelling and calculation, i.e., by computer control. There are several extant programs that do this. Our goal will be to implement one of these for the LTB line so that a standard orbit can be achieved with the push of a button. The upgrade of the HEBT controls and the addition of several magnets to the HEBT line this summer should greatly facilitate this program.

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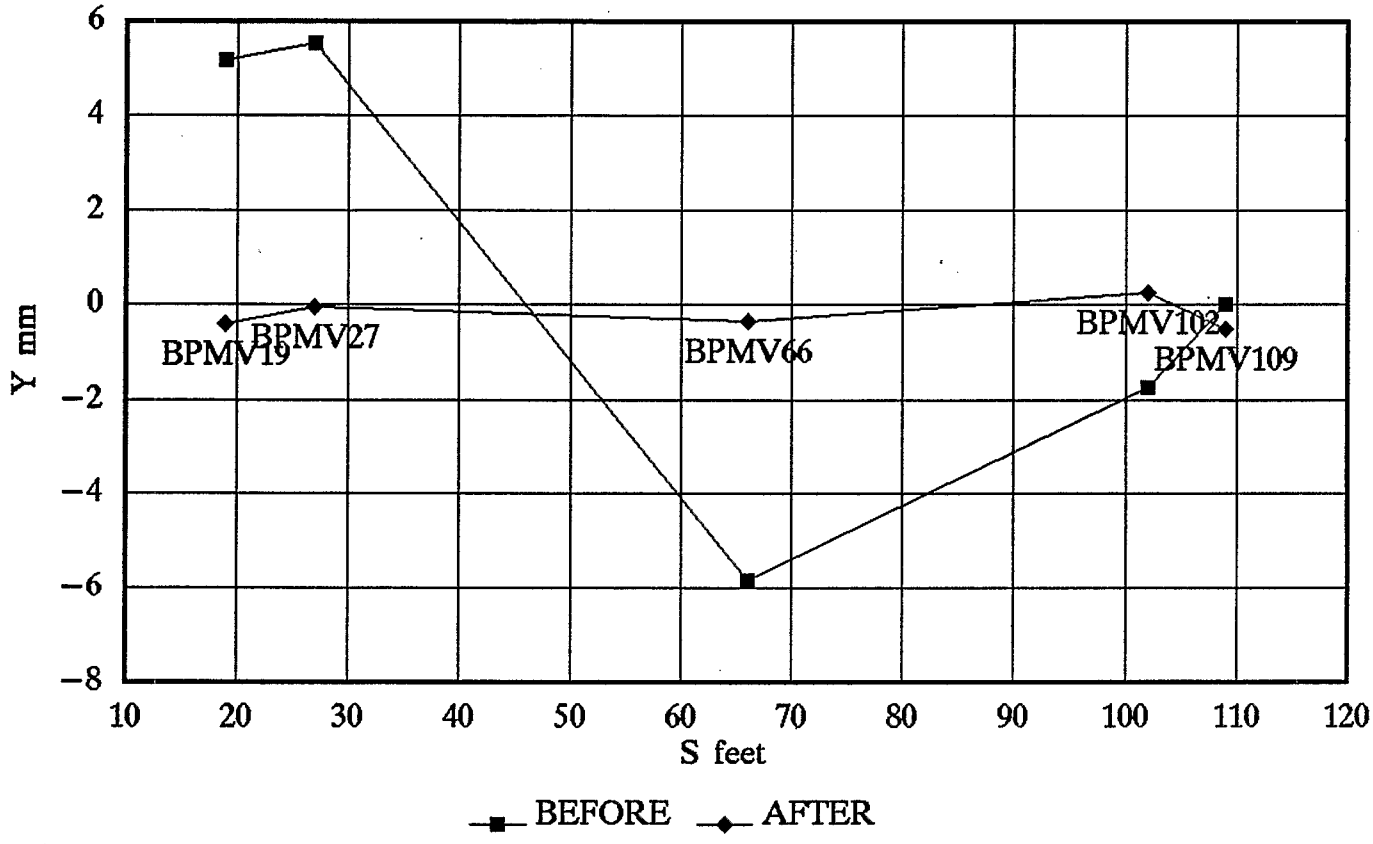
FIGURE 1



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