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Beam matching in HEBT IV

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OBSERVATIONS AND CONCLUSION

In order to perform matching between the linac and AGS, the first thing done was to steer the beam properly through the matching section called HEBT IV so that we can decouple the parameters involved, steering and focusing.

To achieve the steering we use dipoles ND321, ND319, ND343, the beam position monitors NT352, NT377 and the zero degree beam line stationary flag.

Despite the fact that $9.6 \cdot 10^{12}$ protons were accelerated, the beam position on this flag was out of the theoretical center by at least 1". This means either that the flag was misplaced or the beam mis-steered or both. Changing the tune of each quadrupole from Q18 to Q23, separately, we observed the corresponding displacements of the beam center on the flag. The beam was thus mis-steered in this action. It was not possible to center the beam on the flag because of lack of instrumentation. To define the beam direction, we need two reliable position measurements. We conclude from this study that the following be done:

- Survey of stationary flag and flag realigned (completed after studies)
 - Reinstallation of SEM's NE390, NE455, NE417 is needed
 - Additional steering dipole downstream of BMV is also needed
- } partially completed