CORRECTING MAGNETS FOR THE PSB :
THEIR CHOICE, LOCATION AND PERFORMANCE SPECIFICATIONS

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1. New arrangement of dipoles and orbit observation stations

In the course of the studies on orbit corrections it was found that 18 observation stations and 16 dipoles *) arranged as shown in Fig. 1a would permit a satisfactory orbit correction 12,13). A comparison of this correction with that by the old arrangement (28 stations, 26 dipoles) shows that the loss of vertical acceptance is smaller than 6°/0 13).

As regards the beam observation stations, the new position brings with it a number of improvements: electrodes of higher sensitivity, better accuracy, and circular cross-section14) (as against rhomb shaped electrodes in the old location), reduced outgassing area, higher conductance and therefore lower mean vacuum pressures15) (such as 8 10⁻⁸ Torr in L4 as against 10⁻⁷), and a simplified manifold design. The price to be paid is essentially an increased diameter of the multipoles (into which the electrodes are fitted concentrically) which nevertheless leads to an acceptable design16).

*) A 17th dipole (in 11 L1) is required for the correction of the closed orbit at ejection.
2. Correction dipoles and their power supplies

In order to avoid induced voltages and to standardize (and to combine) H and V dipoles, the H dipoles have been moved out of the main bending magnets, mainly into straight sections L4 (see Fig. 1a). As the precision of the current settings need only be about ±7°, "digital" supplies were considered but finally a more standard arrangement was adopted\(^{17}\). The reduced precision lowers considerably the price for a computer assisted control system\(^{18}\). We now plan to pulse these supplies\(^{19}\).

REFERENCES

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