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BH/afm

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ORBIT DISPERSION IN THE COLLECTOR

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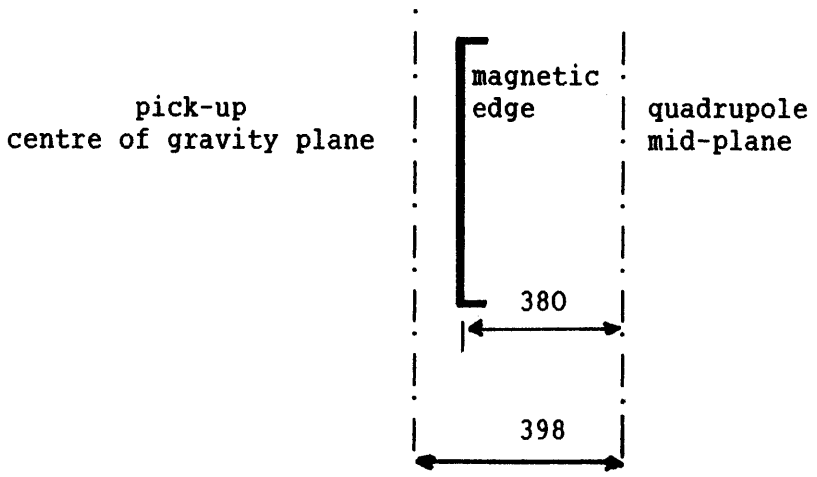
The AC orbits have been measured for five revolution frequencies corresponding to a theoretical (-1%, +1%) momentum interval. The results are plotted in Fig. 1 for each quadrant. The orbit dispersion is defined as:

$$D_x = \frac{x(0.01) - x(-0.01)}{0.02}$$

and its graph is shown in Fig. 2. An average value $\bar{D}_x$ is deduced for the pick-up's in the arcs which belong to three different classes:

	exp. $\bar{D}_x$ (m)	theoretical D_x (m)
F	0.7838	0.675
D1	1.9381	1.825
D2	2.5275	2.334

The theoretical value is deduced from the ORBIT program in which the magnets are assumed to have "hard" edges; it takes into account the position of the pick-up centre of gravity with respect to the magnetic edge:



The excess of orbit dispersion ΔD is consistent with the positive vertical chromaticity as it can be computed from the tune shift formula:

$$\Delta Q = \sum_{\text{quad}} \frac{1}{4\pi} \left(\frac{K'}{K}\right)(K\beta\ell)\Delta D$$

The orbit dispersion distortion calculated as the difference $D_x - \bar{D}_x$ (Fig. 3) will be corrected in the zero dispersion regions using the orbit correction code MICADO.

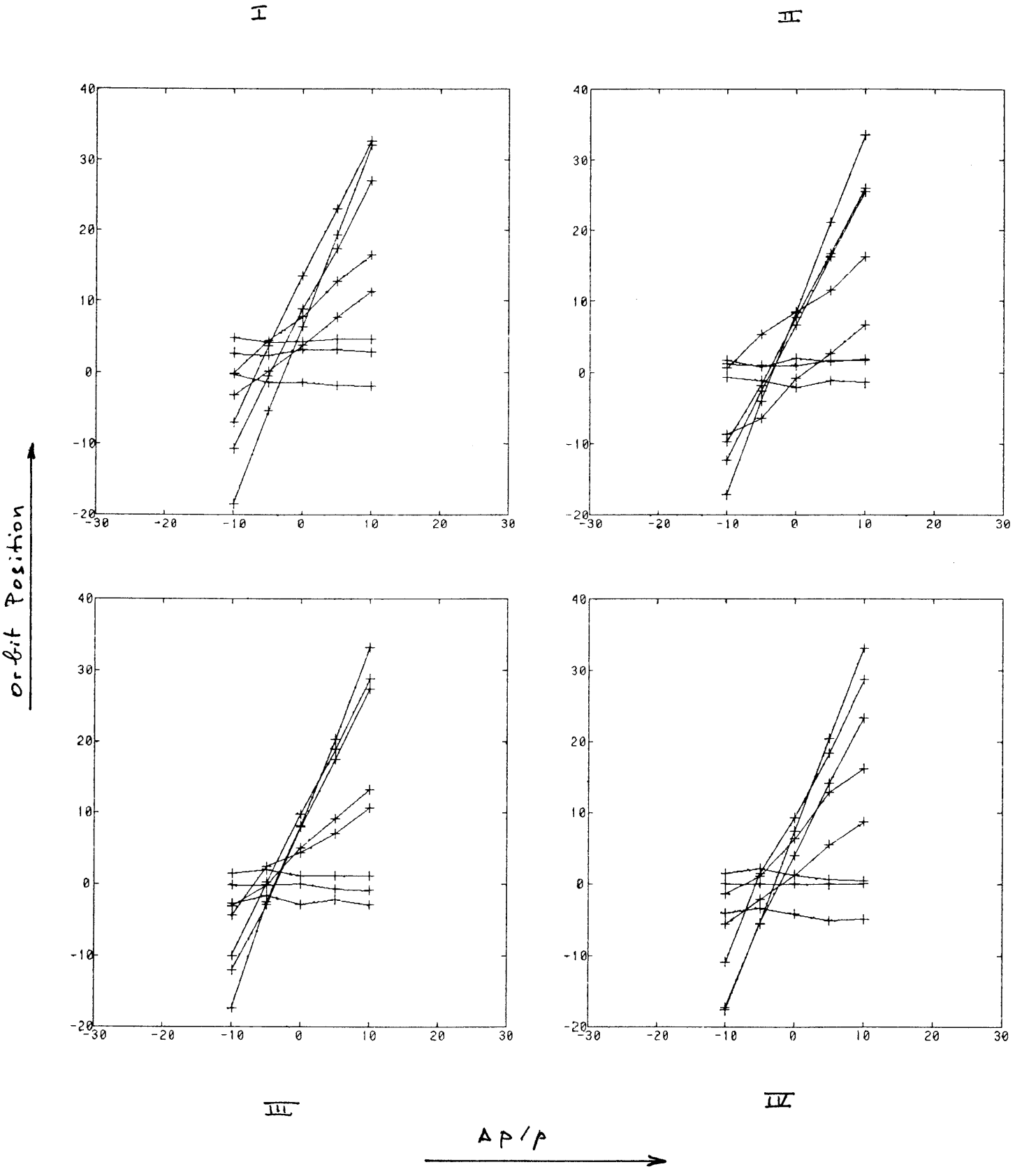


Fig. 1 - Orbit position vs Δp/p at each pick-up station in the four quadrants.

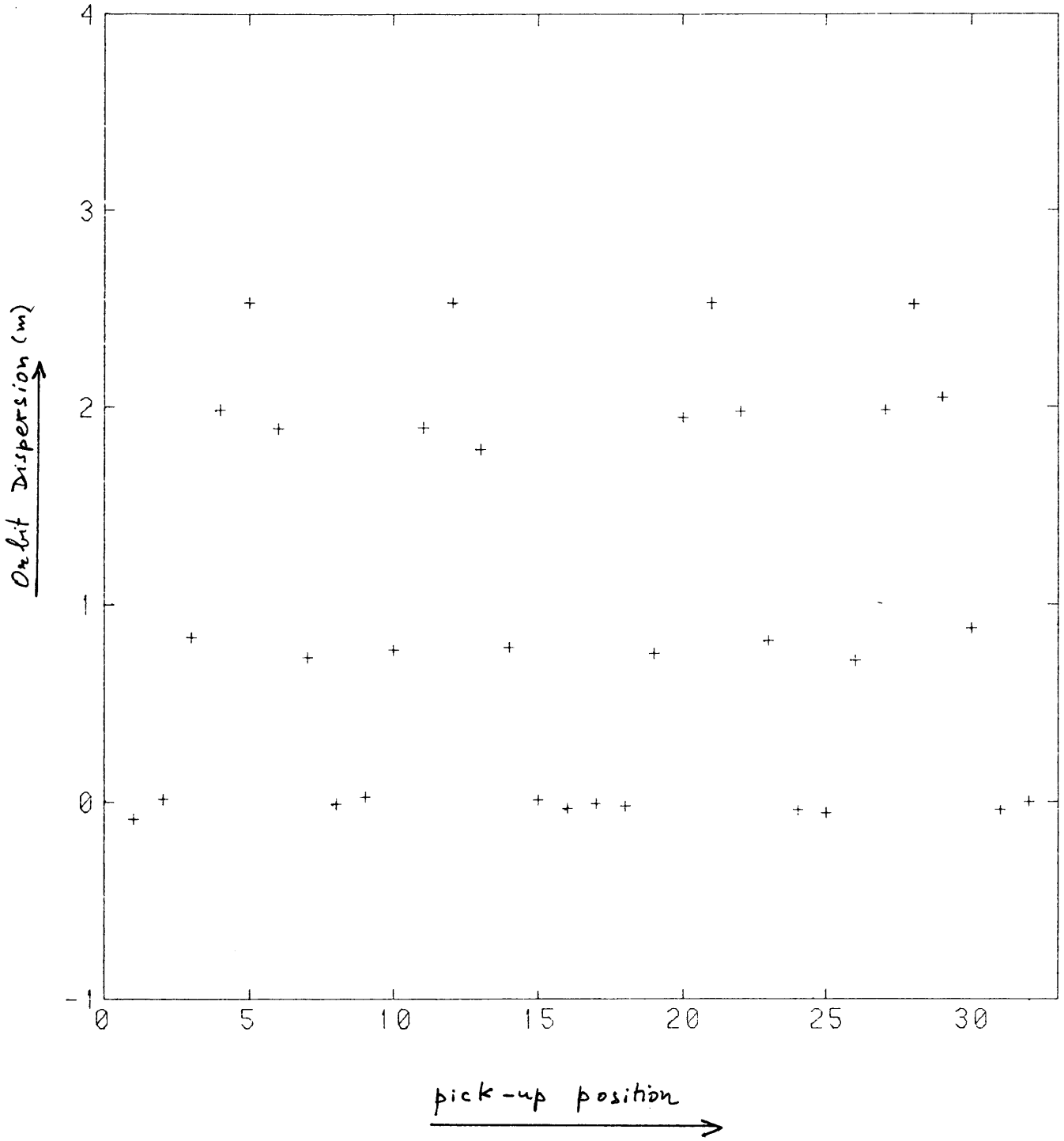


Fig. 2 - *Orbit dispersion in AC.*

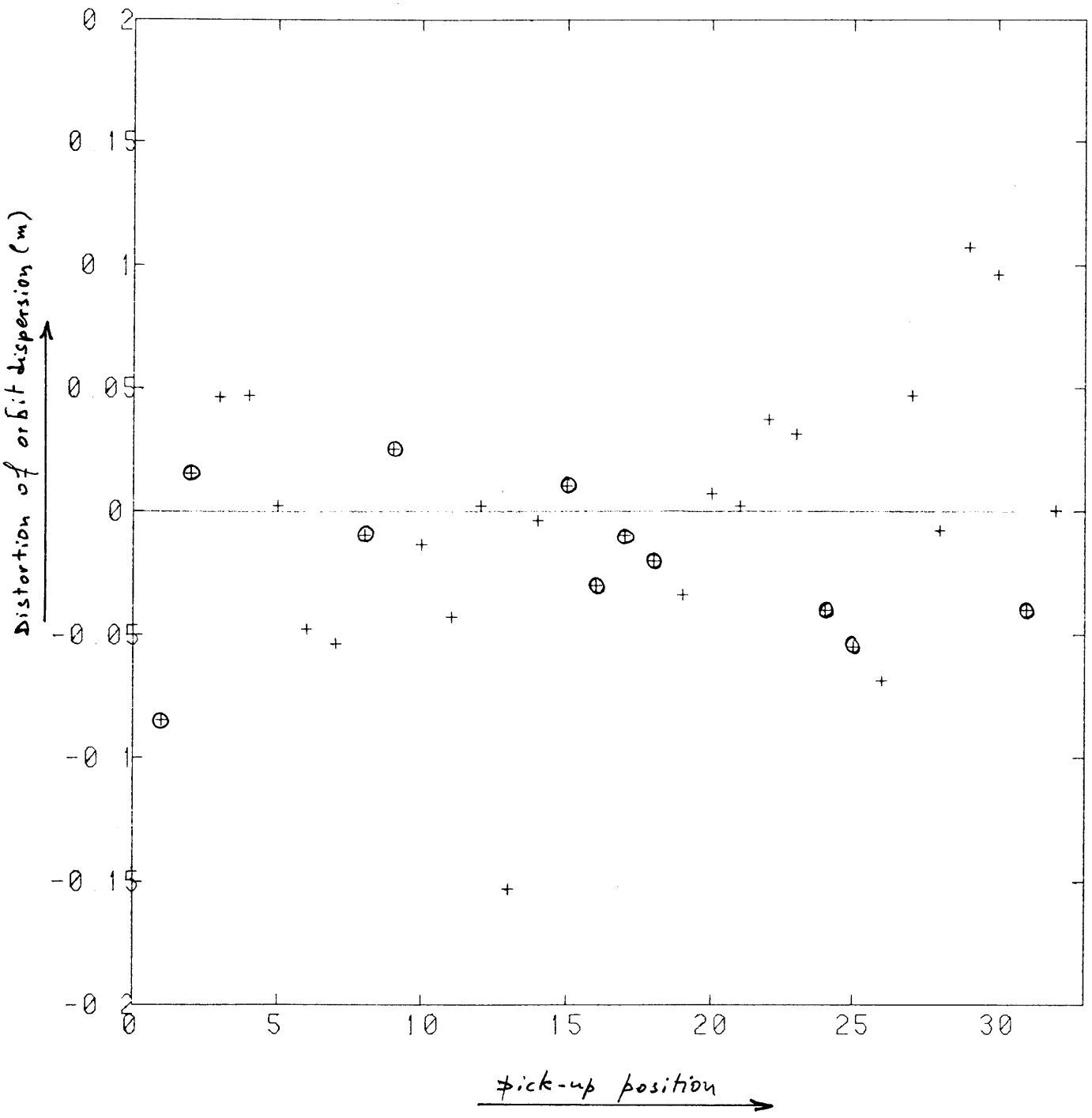


Fig. 3 - *Distortion of the orbit dispersion in AC. The pick-up's in zero dispersion straight sections are noted ⊕*