

HAYSTACK OBSERVATORY

WESTFORD, MASSACHUSETTS 01886

24 February 1989

Area Code 508

692-4764

To: VLBA Data Recording Group

From: Alan E.E. Rogers

Subject: Variation of the tracking sensitivity with the angle the tape makes with the precision plate.

Many factors which effect the position offset of the tape as it passes over the heads are reduced as the angle the tape edge makes with the precision plate is reduced. A previous memo (#124) shows that this angle is about 100 seconds of arc even if all mechanical parts and axes are perfectly perpendicular to the precision plate. This bias is produced by the torque applied to the tape in the vacuum column. Figure 1 shows the measured shift of a recorded track and its sensitivity to headstack axis error and tape loop position as a function of shift. The angle that the tape edge makes with the precision plate as it leaves the vacuum column which I call the tape operating angle is inferred from the calculated bias and the tracking shift. Clearly it is advantageous to align the recorder for a low operating angle especially to make the effect of changes in the loop position in the vacuum columns negligible. Further tests will be needed to determine the desirability of deliberately tilting the capstan to reduce the operating angle further.

Attachment: Figure 1

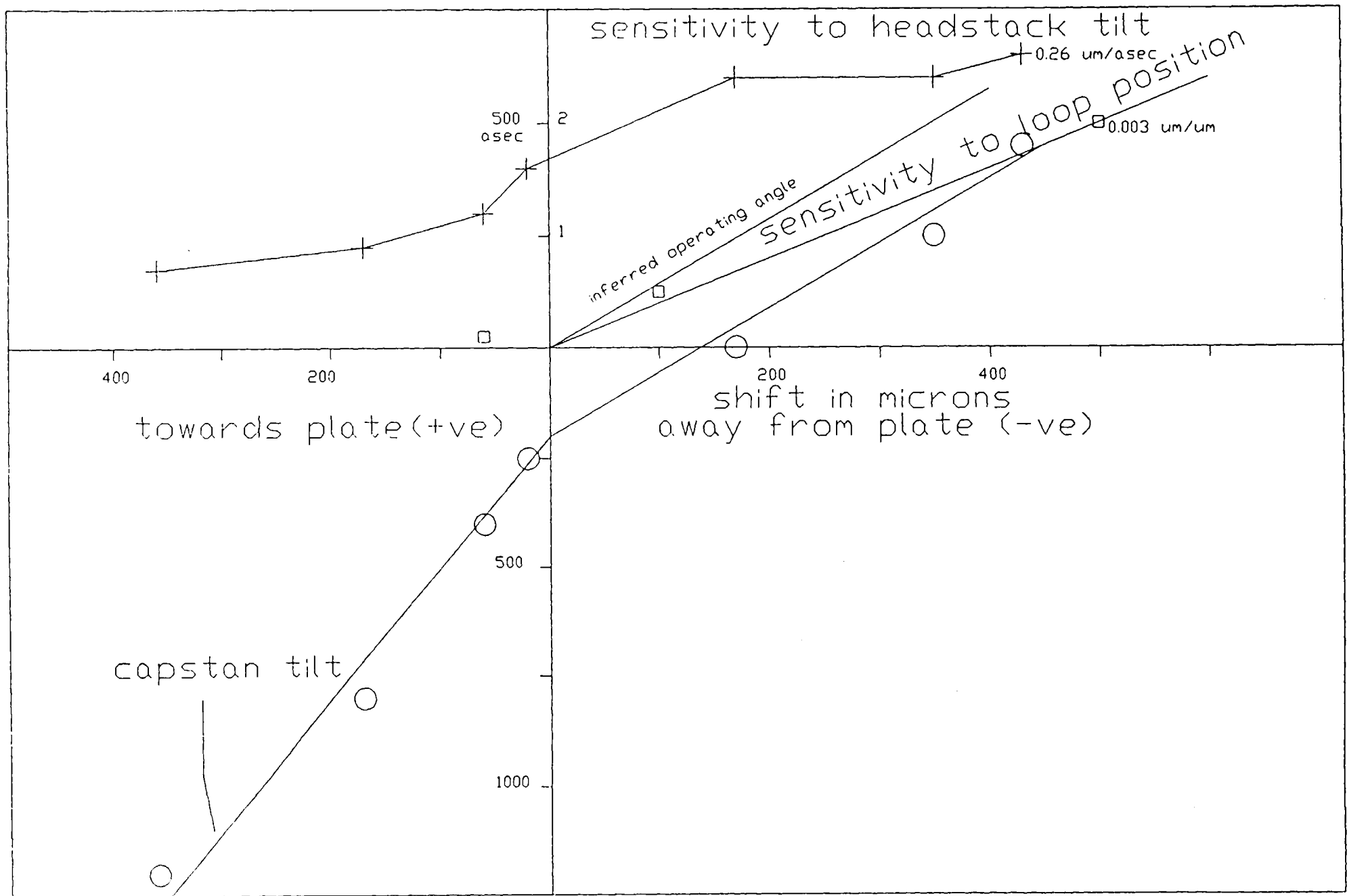


FIG 1. TRACKING SHIFT SENSITIVITY VS TAPE POSITION