

Beam Profile Measurement at A171 Flag

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Subject Beam Profile Measurements at A 171 Flag

OBSERVATIONS AND CONCLUSION

Introduction

This report describes a beam profile measurement at the A 171 flag box by activation of aluminum foils. These measurements were done to check the beam size near the site of the D-line superconducting magnets under actual SEB operating conditions.

AGS Conditions

The beam split at the time of the activation was A line - 3×10^{12} , B line - 1.3×10^{12} and C line - $.3 \times 10^{12}$. The 3 mil aluminum foils were clipped at 45° with respect to the vertical on to the front of the A 171 flag. The beam was run for 100 pulses corresponding to 3.12×10^{14} protons seen by the A line SEC. The beam was stable during the run.

Results

The beam profiles as measured by cutting the foil into 2 mm strips across the entire spot and correcting for foil weight and decay are shown in Fig. 1 and 2. Unfortunately the vertical profile is not complete due to placement of the foil but it seems reasonable to assume that the vertical profile is symmetric as shown by the dotted line.

Working from the quadrupole currents and AGS emittance measurements of H. Weisberg the predicted horizontal and vertical widths are as shown in the figures.

The horizontal widths containing 90% and 99% of the beam are 3.5 cm and 5.2 cm. The corresponding vertical profile heights are 2.9 cm and 6.8 cm.

Conclusions

The observed profile widths are considerably larger than predicted. Since the beam size at this point is of considerable importance to its operation of the D line superconducting magnets, further studies should be carried out in November.

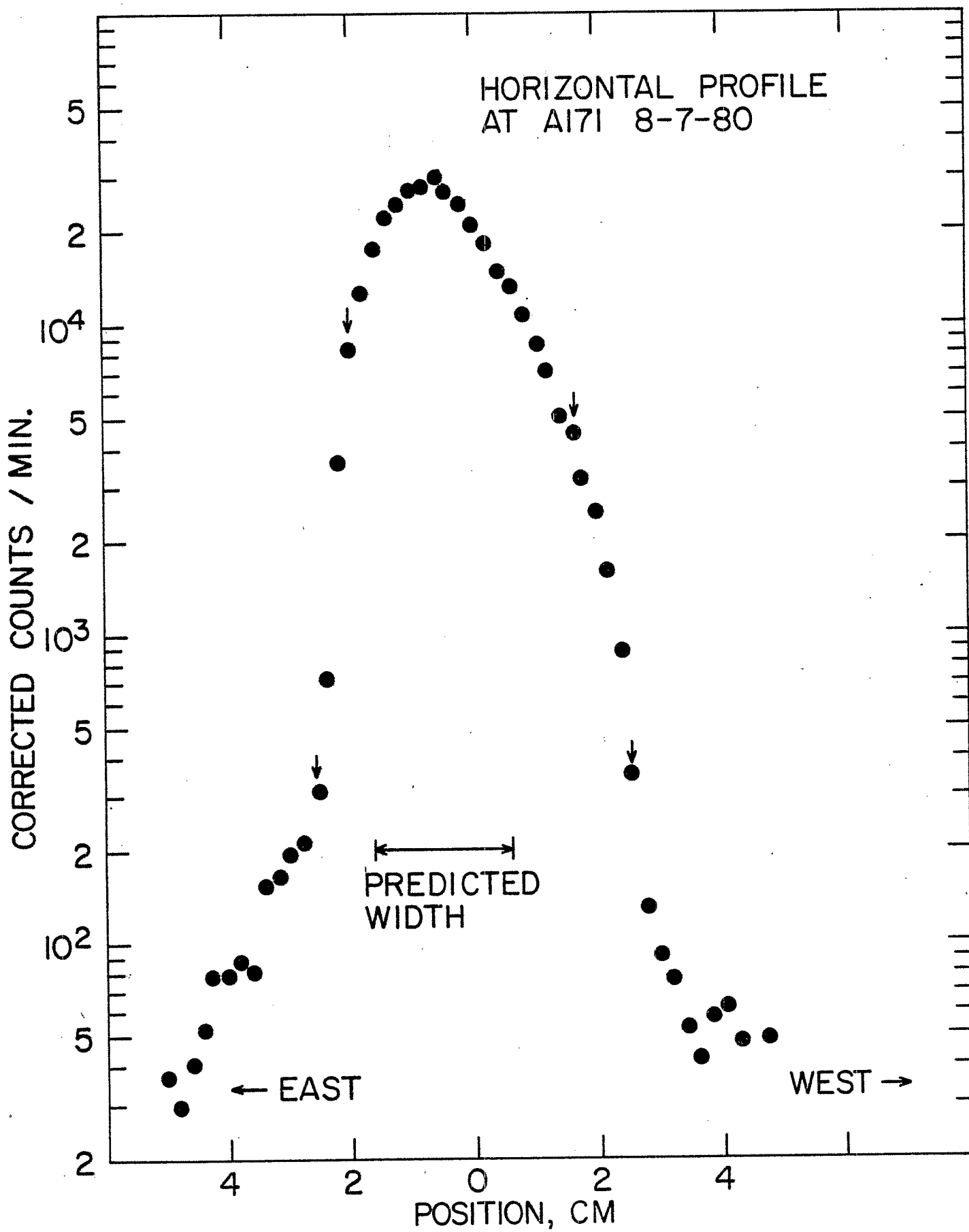


Fig. 1

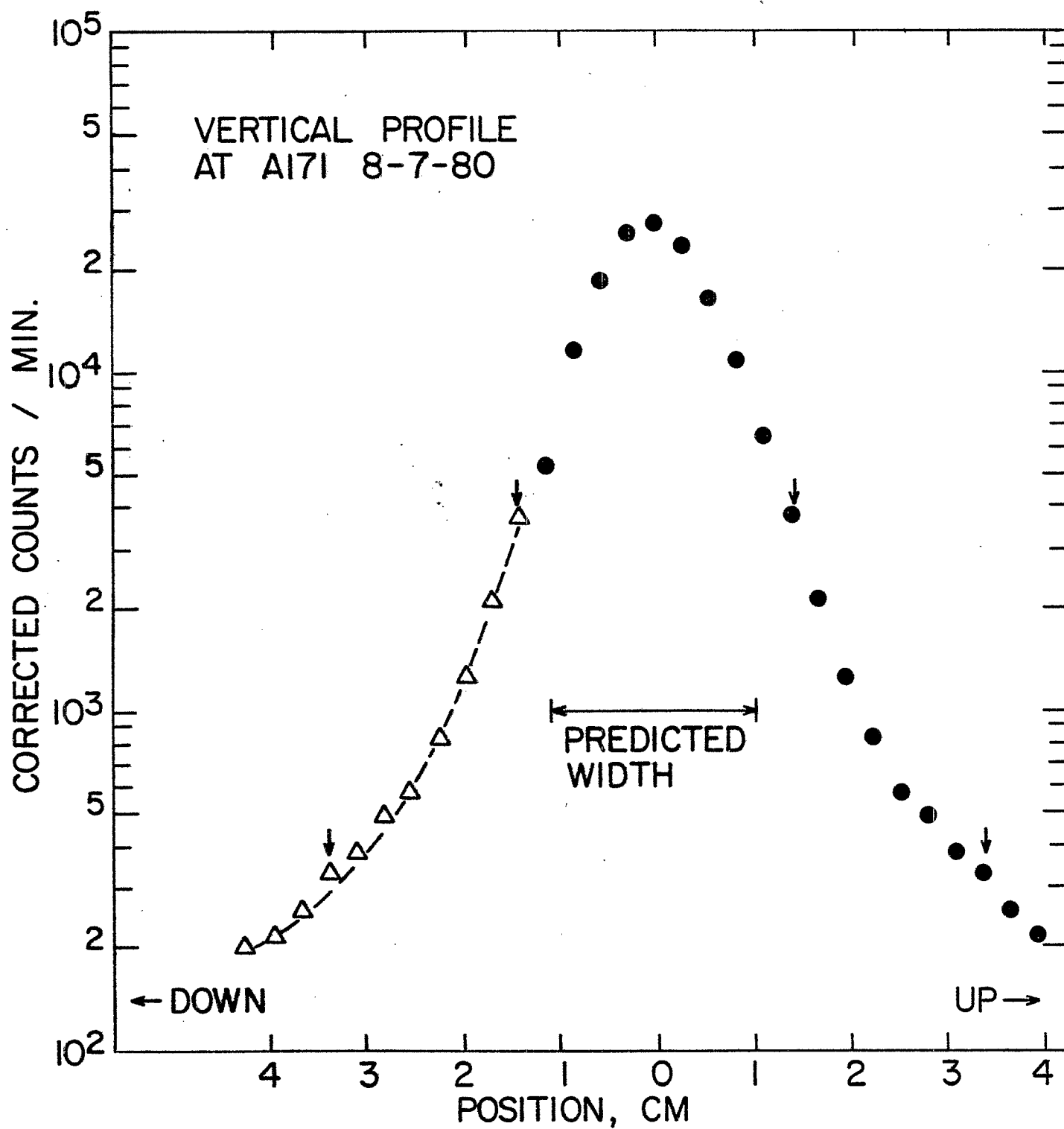


Fig. 2