Fermilab

$\bar{p}$ Note #278

Signal Cables for Magnetic Measurements

T. Ellison
D. Poll

~~P~~ NOTE

- TIM ELLISON
- DON FOLL

|| SIGNAL CABLES FOR ||
Magnetic Measurements

Jim Ellman

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CABLES FOR MAGNETIC MEASUREMENTS:

SUMMARY: WE MADE MEASUREMENTS OF MAGNETIC FLUX INTERCEPTION OF VARIOUS CABLES TO DETERMINE THE BEST CABLES FOR USE IN MAGNETIC MEASUREMENTS.

PROCEDURE: 7.5 m lengths of CABLE (SHORTED AT ONE END) WERE PUT INTO A 1.22 KG DIPOLE FIELD. WE MEASURED THE MAGNETIC FLUX INTERCEPTION BY INTEGRATING THE OUTPUT OF THE CABLE.

THE RESULTS ARE LISTED IN TABLE 1.

TABLE I.

CABLE TYPE:	AREA BETWEEN CONDUCTORS: PER LENGTH (FOR 7.5 m.)	mm ² /m
• RG-108 (TWINAX)	54	54
• RG 174	}	24
• RG 174 BELDEN (9239) LOW NOISE COAX		
• BELDEN 8450 TWISTED PAIR		3.3
• BELDEN 9452 LOW NOISE TWISTED PAIR		2.9

Belden 9452 was the best; RG 108
was the worst.