

EXPONENTIAL EXPERIMENTS IN THE WEST STANDS

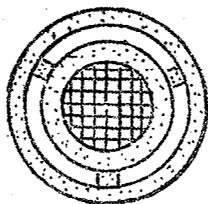
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"W" Lattice

An exponential pile simulating the proposed "W" lattice was measured in the last month. The construction of the pile and final measured results are here summarized:

Lattice: 8" square lattice, metal rods in AGOT graphite; L = 50.1 cm.

Cell:  2S aluminum



 Ames metal, mostly with T.D.S. < .1; measured density as used 18.8 g/cm³.

Metal	1.62 cm radius	
Inner Al	.05 cm thick	
Annular Space	.22 cm thick	Measured vol. of space
Outer Al	.15 cm thick	2.08 cm ³ /cm of tube
Al Spacers	.22 x .45 cm	

Results for the Laplacian:

Pile	Laplacian
W_E (air space only)	$\Delta_{trans} = -93 \pm 2 \cdot 10^{-6} \text{ cm}^{-2}$ measured with gradient transverse to rods.
W_F (space filled with tap water)	$\Delta_{trans} = -59.8 \pm 3 \cdot 10^{-6} \text{ cm}^{-2}$ measured

Measured fraction of film space filled with water = $.91 \pm .04$

For 2.08 g H₂O/cm, or 1.86 mm film: $\Delta_{corrected} = -56 \pm 3 \cdot 10^{-6} \text{ cm}^{-2}$.

A measurement made with sources on the sides of the pile showed a negligible gap correction, giving a value for Δ long about 1 larger than Δ_{trans} .

Program

Measurements have been completed with different concentrations of boron in the water in an effort to measure the migration length. The Al is being removed and the Laplacian for the metal alone will be measured to serve as a reference point for the metal sampling program.

A detailed interpretation of these results will be reported by Mr. Weinberg of the theoretical section. In general, it may be said that there is substantial agreement with the theory on the effect of a water film.