Experiment No: 2(B)

Aim of the Experiment:-

To calculate the value of channel width W for f x g = 1.

Theory:-

Given that f x g =1

Again we know the value of f = (L- ΔL)/L
Where

$$\Delta L = -x_j + \sqrt{x^2_j + 2x_j x_{dm}}$$

But, from the condition f x g = 1,

So, g = 1/f

Again, we know that,

$$g = 1 + \frac{A_{NWE}}{x_{dm} W}$$

Using above two equations, we can calculate the value of W.

MATLAB Program to calculate the value of W:

```
%Program to calculate the value of W
%--------------------------------------------------------------------

clc;
clear all;
close all;
na=10^22;
ni=1.5*10^16;
tox=10^(-8);
xj=5*tox;
q=1.6*10^-19;
esi=11.8*8.854*10^-12;
eox=3.9*8.854*10^(-12);
cox=eox/tox;
l=500*10^(-9);
a=.026;
fs=a*log(na/ni);
xdm=sqrt((2*esi*2*fs)/(q*na));
dl=sqrt(25*tox*tox+10*tox*xdm)-(5*tox);
f=1-dl/l;
g=1/f;
w=3.14*xdm/2*(g-1)
```

Conclusion:

The value of W is found to be as follow :

w = 1.6780e-007

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