
EDL207G Verk 3

Table of Contents

2 TILRAUN	1
2.1	1
1 & 2	1
3 & 4	2
5	2
2.2	2
2.3	3
1	3
2	4
3	5

Lögmál Ohm og geislunarafl ljósaperu

2 TILRAUN

```
format shortE
err = 0.01;
```

2.1

1 & 2

```
AradTengt = 4.767e-3 % A Raðtengt
AradTengtErr = AradTengt*err
```

```
AradTengt =
    4.7670e-03
AradTengtErr =
    4.7670e-05
```

```
VradTengt = 0.955 % V Raðtengt
VradTengtErr = VradTengt*err
```

```
VradTengt =
    9.5500e-01
VradTengtErr =
    9.5500e-03
```

```
AhlidTengt = 16.590e-3 % A Hliðtengt
AhlidTengtErr = AhlidTengt*err
```

```
AhlidTengt =
    1.6590e-02
AhlidTengtErr =
    1.6590e-04
```

```
VhlidTengt = 0.831 % V Hliðtengt  
VhlidTengtErr = VhlidTengt*err
```

```
VhlidTengt =  
    8.3100e-01  
VhlidTengtErr =  
    8.3100e-03
```

3 & 4

```
Rad = VradTengt/AradTengt  
RadErr = Rad*2*err  
Rhliid = VhlidTengt/AhliidTengt  
RhliidErr = Rhliid*2*err  
  
RadMdl = 100 + 100  
RhliidMdl = (100*100)/(100+100)
```

```
Rad =  
    2.0034e+02  
RadErr =  
    4.0067e+00  
Rhliid =  
    5.0090e+01  
RhliidErr =  
    1.0018e+00  
RadMdl =  
    200  
RhliidMdl =  
    50
```

5

```
Wrad = AradTengt*VradTengt  
WradErr = Wrad*err*2  
Whliid = AhliidTengt*VhlidTengt  
WhliidErr = Whliid*err*2
```

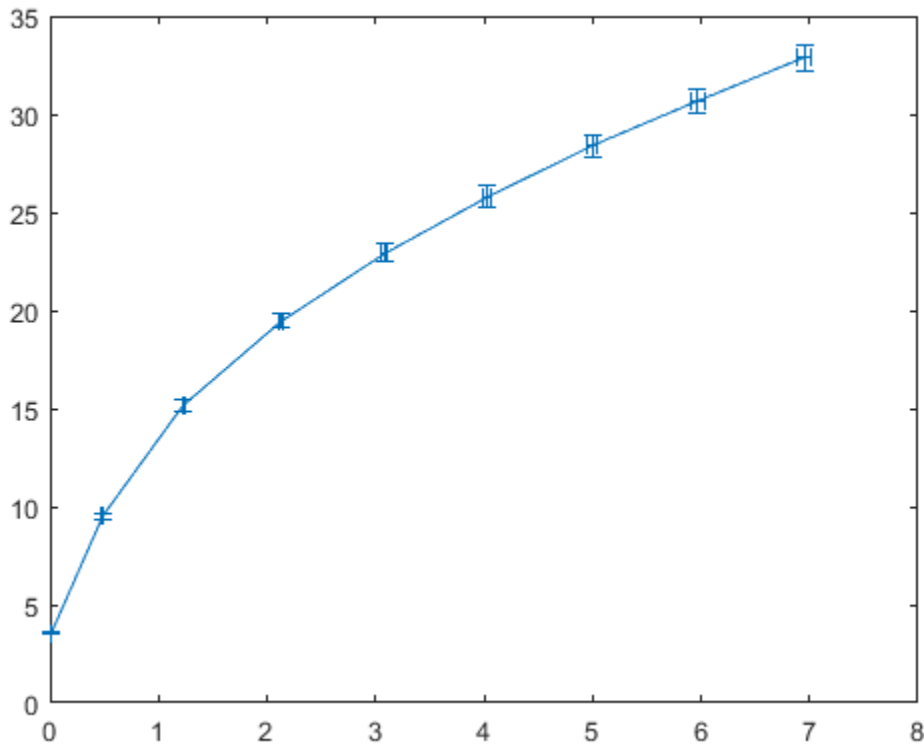
```
Wrad =  
    4.5525e-03  
WradErr =  
    9.1050e-05  
Whliid =  
    1.3786e-02  
WhliidErr =  
    2.7573e-04
```

meira í hliðtengdu

2.2

volt plan 0,1,2,3,4,5,6,7,8

```
V = [10.6e-3,0.480,1.229,2.130,3.081,4.03,5.00,5.97,6.95];
A = [2.983,50.51,80.95,109.38,134.34,156.12,176.07,194.39,211.51]*1e-3;
R = V./A;
Error = (zeros(1,length(V))+1).*err*2.*R;
Verror = (zeros(1,length(A))+1).*err.*V;
fig = figure(1);
errorbar(V,R,Error,Error,Verror,Verror)
```



Nei, viðnám er háð spennu

2.3

1

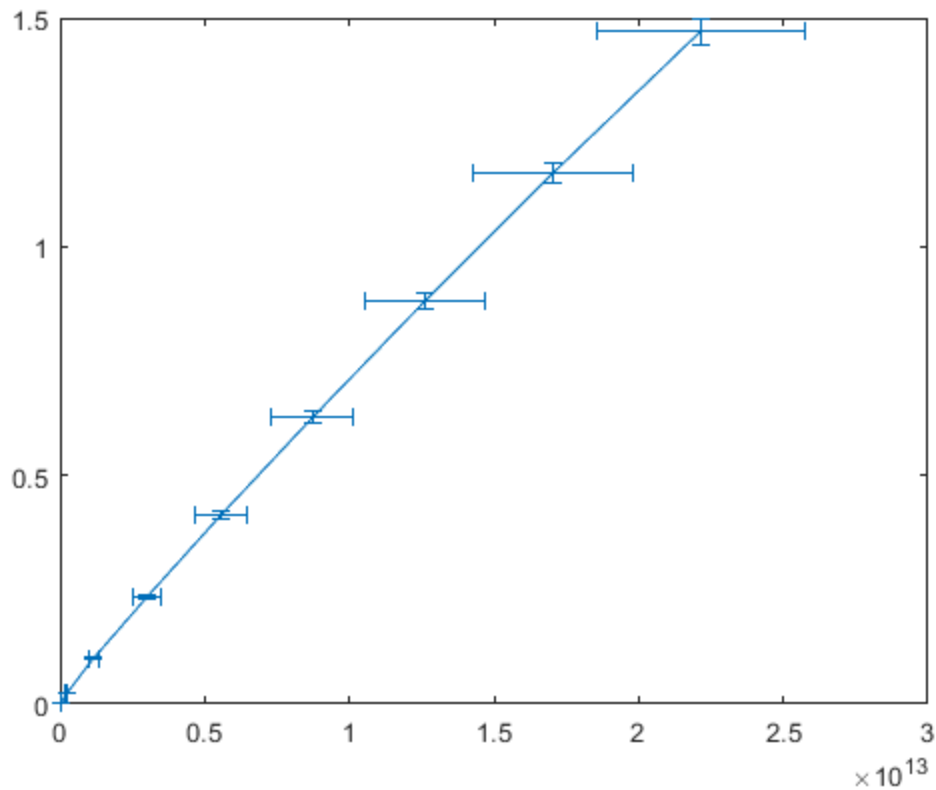
```
P = A.*V
alpha = 4.40e-3;
T0 = 22.6+273.15
T = (R.*R(1)^-1-1)*alpha^-1 + T0
Error = 1 + T.*(Error.*R.^-1+Error(1).*R(1).^-1)
```

```
P =
Columns 1 through 6
    3.1620e-05    2.4245e-02    9.9488e-02    2.3298e-01    4.1390e-01    6.2916e-01
Columns 7 through 9
    8.8035e-01    1.1605e+00    1.4700e+00
```

```
T0 =  
    2.9575e+02  
T =  
    Columns 1 through 6  
    2.9575e+02    6.7627e+02    1.0395e+03    1.3140e+03    1.5353e+03    1.7195e+03  
    Columns 7 through 9  
    1.8847e+03    2.0327e+03    2.1701e+03  
Terror =  
    Columns 1 through 6  
    1.2830e+01    2.8051e+01    4.2580e+01    5.3558e+01    6.2412e+01    6.9778e+01  
    Columns 7 through 9  
    7.6390e+01    8.2309e+01    8.7803e+01  
  
T4 = T.^4  
T4error = 4*T4.*Terror.*T.^-1  
Perror = (zeros(1,length(P))+1).*err*2.*P  
  
T4 =  
    Columns 1 through 6  
    7.6507e+09    2.0917e+11    1.1676e+12    2.9807e+12    5.5563e+12    8.7410e+12  
    Columns 7 through 9  
    1.2619e+13    1.7073e+13    2.2177e+13  
T4error =  
    Columns 1 through 6  
    1.3276e+09    3.4704e+10    1.9131e+11    4.8599e+11    9.0348e+11    1.4189e+12  
    Columns 7 through 9  
    2.0457e+12    2.7653e+12    3.5891e+12  
Perror =  
    Columns 1 through 6  
    6.3240e-07    4.8490e-04    1.9898e-03    4.6596e-03    8.2780e-03    1.2583e-02  
    Columns 7 through 9  
    1.7607e-02    2.3210e-02    2.9400e-02
```

2

```
fig = figure(1);  
errorbar(T4,P,Perror,Perror,T4error,T4error)
```



3

```
slope = polyfit(T4,P,1);
slope = slope(1)
```

```
slope =
    6.6330e-14
```

```
blbDiam = 30e-6;
rhoW = 5.6e-8;
```

```
S = (R(1)*pi^2*blbDiam^3)*(4*rhoW)^-1
```

```
S =
    4.2273e-06
```

```
steffBoltz = 5.670367e-8;
```

```
epsilon = slope*steffBoltz^-1*S^-1
```

```
epsilon =
    2.7671e-01
```

```
slopeError = slope*((T4error(1)+T4error(9))/(T(9)^4)+(Perror(1)+Perror(9))/
P(9))
```

```
slopeError =
```

```
1.2066e-14  
Serror = S*Rerror(1)*R(1)^-1  
Serror =  
8.4547e-08  
epsilonError = epsilon*(slopeError/slope+Serror/S)  
epsilonError =  
5.5870e-02  
close(fig)
```

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